



# MAGAZINE

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# THE I.C.I. MAGAZINE

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The *I.C.I. Magazine* is published for the interest of all who work in I.C.I., and its contents are contributed largely by people in I.C.I. It is printed at The Kynoch Press, Birmingham, and is published every month by Imperial Chemical Industries Limited, 26 Dover Street, London, W.1. Telephone: REGent 5067-8.

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*Front Cover: Shipping Fertilizers at Billingham Wharf.*

*Back Cover: Holiday in Cumberland, by H. Emmett, F.R.P.S.*

The Editor is glad to consider articles for publication.  
Payment will be made for accepted contributions.

## OUR CONTRIBUTORS

MR. ARNOLD BEBBINGTON, who writes on *Bowls*, is the *Crown Green Bowling Champion of England*. He started to play bowls at the age of 14. Now, aged 45, he has won both the *Cheshire Championship* and the *British Championship*. He has worked all his life like his father before him in salt, joining the *Salt Union* (later acquired by I.C.I.) in 1919. Employed as a *leading hand*, his job is *bagging and loading salt*.

MR. MENDOZA, who writes on his famous ancestor *Dan Mendoza the pugilist*, is a research chemist in *Dyestuffs Division*. After graduating in chemistry at *East London—now Queen Mary—College of London University*, he started to teach chemistry but in 1918 joined *Levinstein Ltd.*, later incorporated in the *British Dyestuffs Corporation Ltd.*, which in turn became I.C.I. The whole of his career as a research chemist has been devoted to *azo dyes*—by far the largest group of synthetic dyes. He may properly be regarded as an authority in this field.

MR. A. R. N. ROBERTS, who writes the story of the remarkable expansion of *Plant Protection Ltd.* in its twelve years of existence, has been their director in charge of advertising and public relations since 1944—the year, in fact, in which he ceased wartime work for the *Ministry of Agriculture*. His service dates back to 1933 when he went as *Sales Manager to Abol Ltd.*, one of *Plant Protection's* constituent companies. He has thus a long acquaintance with *Plant Protection problems*.

MR. S. ROGERSON, who writes in the series of articles designed to help parents guide their children in choice of career, needs no introduction to readers. Well known in the Company as the *Publicity Controller* and to a wider public as an author, he has contributed several articles to the Magazine in recent years.

# CARGOES OF I.C.I.'s Rec

It is no exaggeration to say that chemicals—and most of the other products exported by I.C.I.—are essential to the existence of any modern state. When the war ended there was immediately a great demand for I.C.I. products in most countries of the world. This was largely because they had been deprived of their full requirements during the war, but also because Germany was no longer in a position to supply. Our exports consequently increased rapidly and were only governed by our ability to produce. In 1946 they were of a value of £25,000,000; by 1948 this had risen to £37,000,000; and last year the record figure of £38,000,000 was reached. The comparable figure in 1938 was £9,000,000. The actual increase in the weight or volume of our exports was not, however, so great. Increased costs of production and better realisations considerably inflated these figures in comparison with 1938. In terms of volume, we exported about half as much again in 1949 as in 1938, the actual estimated figure being an increase of 58% by volume.

These figures are impressive, but they only give part of the story, dealing as they do with "direct" I.C.I. exports only. I.C.I. products are used extensively in the home manufacture of numberless products subsequently exported. Soda ash is used for scouring wool which goes into making high-class woollens, and these are a valuable export; it is also used for glass, which is likewise exported in large quantities. For every ton of rayon exported a ton of caustic soda has gone into its manufacture. Dyestuffs are used in dyeing and printing textiles, of which dyed cotton yarns and materials were exported in 1949 to the extent of £81,000,000. Paint, leathercloth and

*A Blue Star cargo ship, outward bound with a cargo of explosives and the coastal trade from*





# CHEMICALS

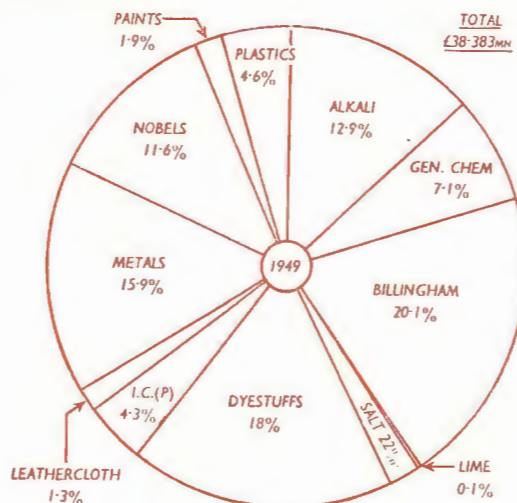
## ord Exports

plastics go into the cars which were exported last year to the extent of £66,000,000; and so on—these are just a few examples.

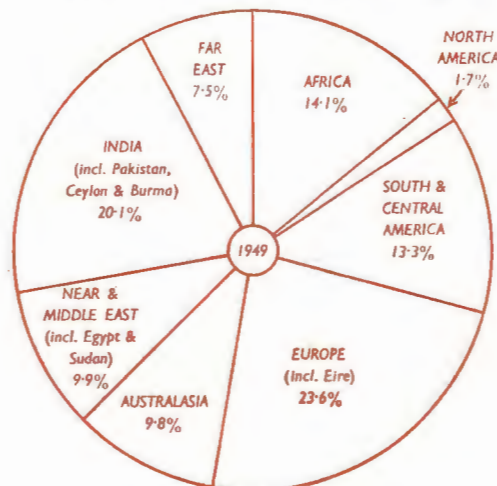
Clearly we want to get the maximum value for the country's exports, and chemicals and other I.C.I. products bring in more after additional labour has been used to make what are known as "end products." However, in 1945 the factories making many of these end products were engaged in war production, and a costly and relatively slow period of reconversion to peacetime production had to be carried out. It was just at this juncture that I.C.I. exports were of great value to the U.K. balance of payments, because no conversion was needed and these exports could be made straight away. As a consequence, chemicals, from having been seventh before the war in the list of twenty manufactured exports published by the Board of Trade, rose in 1945 to being third. Moreover, a number of countries—notably Argentina and Brazil—insisted that certain minimum quantities of soda ash and caustic soda should be guaranteed to them before they were prepared to negotiate trade agreements for the foodstuffs this country needed. Our exports were therefore of considerable national importance.

Since chemicals, fertilizers and allied products are so important to any modern state, it follows that all that are big enough—and can—manufacture their own. It is only the smaller countries or agricultural countries which do not have large chemical industries that have to depend on imports. Moreover, it is those with large populations still backward in industrialisation which supply the biggest export opportunity, e.g. China and India, both with populations of about 400 millions.

(Continued overleaf)

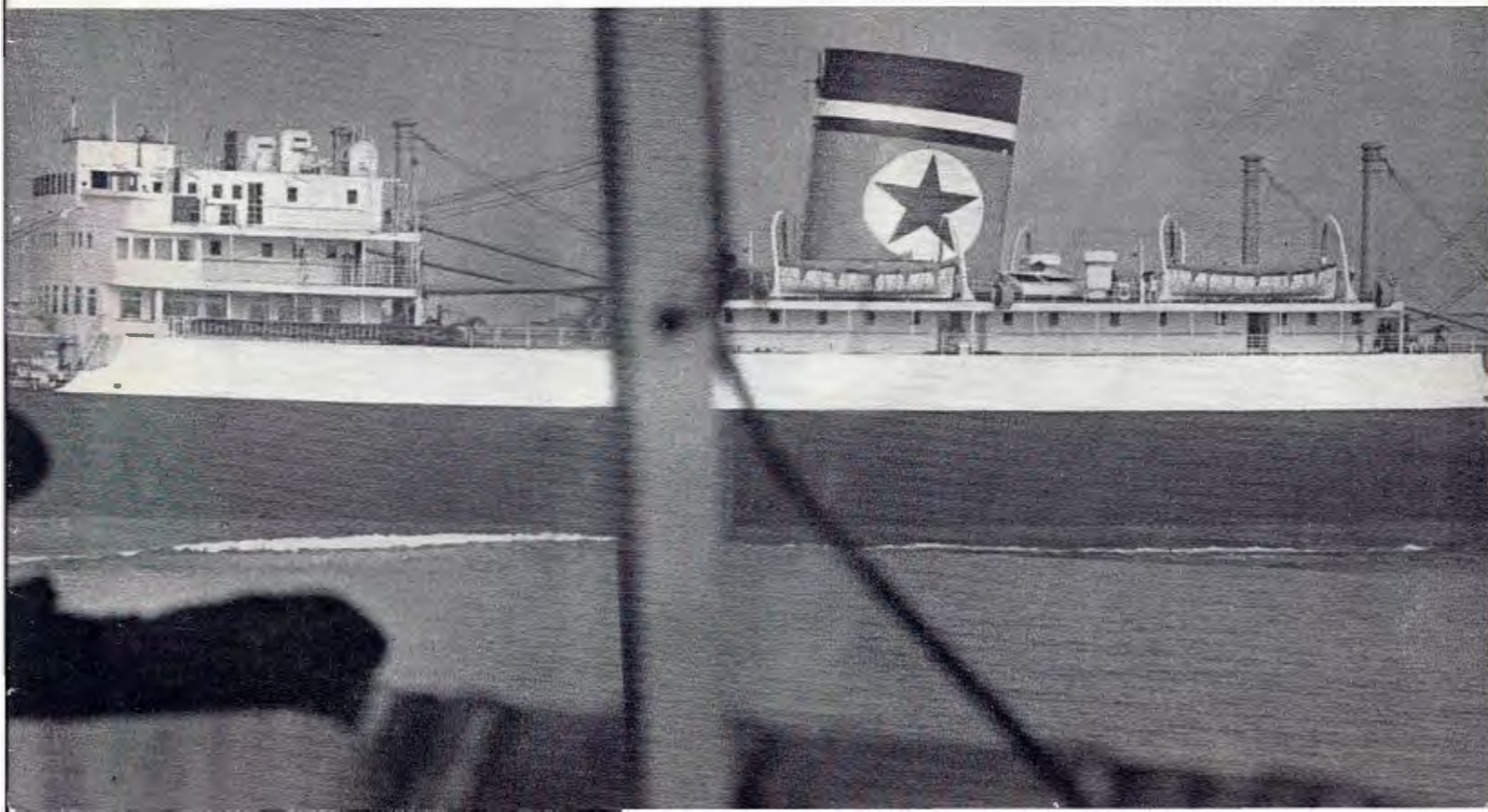


How the Divisions contribute to I.C.I. exports



The countries to which I.C.I. exports have gone

sodium cyanide for the gold-mining industry in Australia, passes Nobel Division's S.S. Lady Dorothy. The S.S. Lady Dorothy carries Scotland to Liverpool, London and other home ports for transhipment to ocean-going vessels





# SOME OF OUR OVERSEAS C



**ARGENTINA** ROUNDING UP STEERS FOR BRANDING. *Mention the Argentine, and thoughts turn to beef. To help get our share of it we sell anhydrous ammonia for refrigeration and sodium sulphide for treating hides. Our main exports to South America are, however, alkalis, dyestuffs and explosives.*



**EAST AFRICA** DAIRY CATTLE IN KENYA. *Prospects for cattle-raising in Africa have been revolutionised by the discovery of I.C.I.'s new drug 'Antrycide,' which provides an answer to the tsetse fly.*



**FAR EAST** INDIAN WOMEN DYEING TEXTILES. *The Dyestuffs Division's best customers. There is now a growing demand for the more expensive also an important I.C.I. market—principally for alkali*

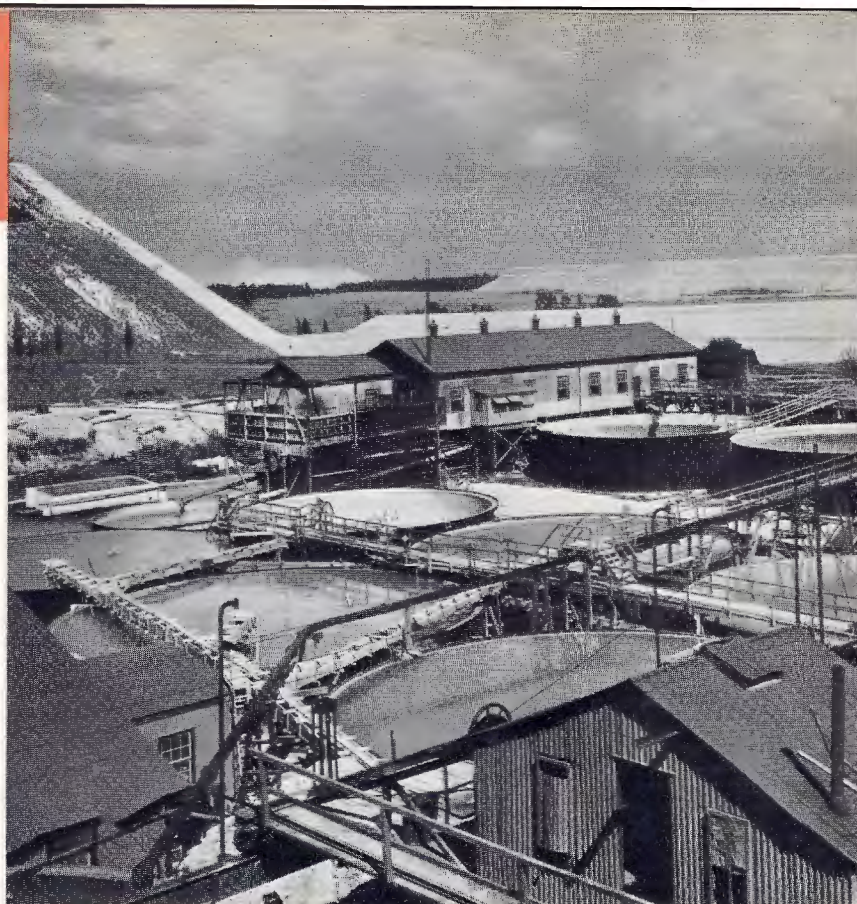


# USTOMERS

(Continued from page 163)

Before the war, therefore, it was to these territories and the South American markets already referred to that the bulk of I.C.I. chemical exports were made. Since the war this pattern of trade remains, but new areas have been opened up. Europe has been entered to take the old German markets, and particular efforts have been made to export to America and Canada, although they are largely self-sufficient. The high figure our exports reached in 1949 is specially satisfactory, because for a large part of the year many of our major products could not be exported to their main markets in India, China and Argentine. Exchange considerations, war and political reasons prevented this. It was, therefore, only through the development of new markets since the war, and also by the development of new exports, such as pharmaceuticals and plastics, that this record figure was achieved.

Competition is increasing. Germany is re-entering her old markets, the Italians are exporting alkalis, and the Japanese have started exporting non-ferrous metals again. Markets which were severely understocked in 1945 are now stocked up again. Strenuous efforts will be necessary in 1950 to exceed the 1949 export total, and even to reach the same figures.



**SOUTH AFRICA** A GOLD EXTRACTION PLANT, with treated ore dumps in the background. Although explosives for the South African gold-mining industry are made locally by A.E. & C.I., safety fuse is imported from Nobel Division.



East, and especially India and China, has been for years one of large quantities of indigo and sulphur dyes are exported every year. vat dyes. Malaya, the Commonwealth's greatest dollar earner is and anhydrous ammonia.



**BRAZIL** SKYSCRAPERS IN SÃO PAULO, where Duperial Brazil's head office is situated. Brazil is a very important market for I.C.I.—particularly for Alkali and Dyestuffs Divisions' products.





**EGYPT** COTTON-GROWING IN EGYPT, where fertilizers and insecticides are in great demand. It is here that some of the highest-grade cotton in the world is grown. The great menace is the boll weevil.



**NEW ZEALAND** A TYPICAL SHEEP STATION. Soda ash and 'Lissapol N' are used in scouring wool; sodium sulphide in treating sheepskins.



**INDIA** DHOBIES WASHING CLOTHES. I.C.I. soda ash is extensively used for domestic washing in India, which is done on the river banks.





## WEST INDIES

AN OLD SUGAR MILL IN BARBADOS. *Large quantities of fertilizers are imported by the West Indies for the cane sugar plantations. For a number of years I.C.I. conducted fertilizer experiments on cane sugar in Trinidad.*

## NEAR EAST

CYPRIOTS BEATING OUT COPPER PANS. *Exports of copper to the Near East as sheet and strip provide raw materials for numerous craftsmen, who hammer out pots and pans in the native "shops."*





# I.C.I. NEWS

## LORD McGOWAN VISITS CAIRO, MAGADI AND JOHANNESBURG

Further details of Lord McGowan's African journey are now available. His first visit was to Alexandria, where accompanied by Lady McGowan he disembarked from the liner *El Manek Fouad* on 28th December. Lord McGowan was welcomed here by Mr. D. R. Mackay, managing director of I.C.I. (Egypt), who introduced him to the staff at the I.C.I. offices in Alexandria and also in Cairo, where the Chairman and his party arrived the following day. Lord McGowan addressed the staffs at Alexandria and Cairo.

On 10th January Lord McGowan was presented to King Farouk by the British Ambassador, Sir Ronald Campbell. He gave the king a bound copy of a specially written brochure outlining the valuable contribution which I.C.I. has to make to the development of Egyptian agriculture and the conquest of tropical disease. In the course of his stay he met the leading businessmen and statesmen of Egypt, including the then Prime Minister, Hussein Sirry Pasha, and the ex-Minister of Finance, Hussein Fahmy Bey.

Lord McGowan's next visit of note was to the Magadi Soda Company's works at Magadi, Kenya. On this trip he was accompanied also by Mr. Ormsby Pearce, managing director of African Explosives and Chemical Industries Ltd., Mr. George Mason, head of the African Department of I.C.I., and Mr. W. H. Billington, director of the Magadi Soda Company and managing director of A.E. & C.I. (East Africa) Ltd.

The Chairman and his party arrived at Magadi on 31st January and were received by the Asian staff of the company in their club. On the

following afternoon, after watching a representative African football match, Lord McGowan presented Long Service Awards to European, Asian and African members of the staff—first to those who had been with the Magadi Soda Company for 27 years or more (of whom there were 21) and then to those who had served the company for over 20 years (of whom there were a further 12).

Among the recipients of the 27-year awards were Mr. R. F. Turner, the company's water warden at Ngong (29 years), and Mr. W. H. Billington, who until recently was the general manager. The African recipients included one who had been at Magadi for over 35 years and another who had a service credit of 34 years. Twenty-year awards went to Mr. C. Shotton (Production Manager), Mr. A. J. Rhead (Alkali Manager), and Dr. D. Summers (Chief Chemist).

Later that evening a formal dinner party was given in the European Club, at which all European members of the staff and their wives were presented to Lord and Lady McGowan.

In his speech Lord McGowan said that he was a great believer in personal contacts and, as Chairman of Imperial Chemical Industries, he had put that precept into practice by travelling all over the world. In the course of reviewing the political and economic situation he said he believed that people in Britain were emerging from their troubles, and that there was a renaissance of the spirit which animated the British people many years ago and which had resulted in Great Britain standing high in the comity of nations.

"I am an optimist," he said, "as regards our ability to survive the



*The Chairman with a group of the staff at Magadi Sports Club*





*The Chairman with a group of A.E. & C.I. staff at Johannesburg*

present crisis if we face up to our problems, serious and diverse as they are. We have immense reserves of character which have seen us through in the past, but simply to rely on this historic fact and on our past traditions will not suffice." If we were to survive, he continued, there must be a new spirit, inculcated in the minds of our people to ensure that every ounce of effort, both brawn and brain, of which we were capable was expended in the solution of our economic and financial difficulties.

"I leave you on a note of confidence," he said in conclusion; "in the ability of our country to win through."

On the way south to Lourenco Marques the steamer called at Zanzibar, Dar-es-Salaam, Mosambique and Beira, at which places the Chairman had talks with our representatives.

At Johannesburg, where he was accompanied by Mr. Steel, Mr. Bingen and Mr. Mason, Lord McGowan discussed the extension of capacity to meet greatly increased demands for explosives caused by the additional price for gold resulting from the devaluation of the pound. A.E. & C.I. Ltd., jointly owned by I.C.I. and De Beers Company, envisaged for the above purpose an expenditure of anything up to £12,000,000 in the next few years, thus showing confidence in the future of the country and Company.

## LORD MCGOWAN RECEIVES HONORARY DEGREE

The students of St. Andrews University gave Lord McGowan, Chairman of I.C.I., a typical undergraduate welcome when he attended a graduation ceremony on 20th April to receive the Honorary Degree of Doctorate of Laws (LL.D.).

The occasion was the installation of Lord Burghley as Rector, and the students were in high spirits throughout the proceedings in the Younger Hall. When Lord Burghley, Lord McGowan and other recipients of the Degree entered the hall in their new academic robes they had to make their way to the platform over a paper-littered floor. Trumpets were sounded, and kettledrums, hand-bells, rattles and whistles all added to the cacophony of sound that preceded the ceremony.

When Lord McGowan stepped forward to receive his Degree from Sir James C. Irvine, Principal and Vice Chancellor of St. Andrews, he was greeted with loud applause by a student body well aware of the practical interest shown by I.C.I. in research work at St. Andrews.

Lord McGowan was presented by Professor J. N. Wright, Dean of the Faculty of Arts, who delivered the customary brief address setting forth the reasons for the honour. When he said "Born in Glasgow..." he was interrupted by the students, who as one man sang "I belong to Glasgow." Lord McGowan smiled broadly, glanced at the Vice-Chancellor and then joined in the rousing chorus. This gesture was just what the students had hoped for, and they showed their delight in an exceptionally long cheer. The chairman was obviously touched by their warm welcome.

## HEAD OFFICE

### *Presentation to Miss L. H. M. Buist*

On 4th April at 2 Grosvenor Place, SIR FREDERICK BAIN presented to Miss BUIST, the Supervisor of Women's Staff at Head Office, an etching and a cheque on the occasion of her retirement from the Company after nearly 35 years' service. There was a large gathering present of her numerous friends at Head Office. With affectionate memories of many years of pleasant association they joined with Sir Frederick in wishing Miss Buist a very happy retirement.

Miss Buist, a graduate of Glasgow University, joined Nobel Industries Ltd. in Glasgow in 1915, coming to London for the first time in 1920. In his speech Sir Frederick spoke of Miss Buist's qualities of humour, generosity and selflessness. "It was those qualities which made her headship of Digswell Hall during the war so memorable," he said. "We pay tribute to Miss Buist today and thank her for the generosity with which she has given of her own personality. Apart from her admirable work as head of the women's staff, to which I have already referred, there are two things which will be particularly associated with Miss Buist's name. First, the gradual achievement of higher positions for women in I.C.I., and secondly, the training school which she has established for those who are just starting their careers."

In conclusion Sir Frederick said: "It is now my privilege to present you with a parting gift from all who have been associated with you. I am proud to have been asked to do this, and I ask you to accept this etching and this cheque with the affectionate thoughts you have inspired in all of us. We wish you long life, health and happiness, with happy memories of your association with I.C.I."

In a letter received from Miss Buist from Ardbeg, near Rothesay, Bute, where she has now made her home, Miss Buist asks if she may convey her thanks to the staff of Head Office through the medium of the *Magazine*. "I feel so grateful to the staff," she writes, "for their great kindness to me, and I am very anxious to acknowledge their good wishes."

### *Mr. B. W. Foster*

By the death of Bernard Foster on 13th April a great many I.C.I. people in Australia and New Zealand, as well as in this country, have lost a friend and colleague for whom they had great respect and affection.

Bernard William Foster was born in 1899, and took his B.A. at Oxford University (New College) with First Class Honours in Chemistry. He was also a B.Sc. and was Research Chemist and Demonstrator at Oxford University before joining Nobel's Explosive Co. at Ardeer in 1922. There he worked in the Research Section, of which he was in charge by 1929. In 1934 he was transferred to the Commercial Research Department at Imperial Chemical House, and he moved thence in 1936 to the Australasian Department as a technical assistant, becoming head of the department on the departure of his predecessor on active service in 1939.

During the ten years in which he remained head of the Australasian Department in London, not only did he do much to knit still closer the bonds between I.C.I. and I.C.I.A.N.Z. but he also established for himself a reputation for the care and thoroughness with which he dealt with every matter which passed through his hands.

Never, in recent years, in very robust health, Bernard Foster was none the less a notable example of conscientious attention to duty, and in 1945-6 he accompanied Lord Glenconner on a visit to Australia and New Zealand. This proved to be a strenuous but useful tour, in the course of which he was able not only to obtain an up-to-date and first-hand knowledge of I.C.I.A.N.Z. but at the same time to add to his many personal friendships on that side of the world.

Visitors to the Australasian Department in Nobel House, particularly those from I.C.I.A.N.Z., need no reminder of Bernard Foster's zeal and interest on their behalf, and everyone who knew him also knew that he was never afraid to speak his mind or strenuously to uphold a point of view he considered right.

All his friends, wherever they may be, will unite in deploring the untimely loss of so useful a life, and to his widow, in her great bereavement, their sympathy will go out in full measure.



## DYESTUFFS DIVISION

### *Suggestion Award Wins £50*

At the end of the March meeting of the Blackley Works Council, Mr. L. H. Pickles, a chargehand fitter in the Engineering Department, was presented with a cheque for £50 as an award for a suggestion which resulted in a considerable saving of maintenance and replacement costs. Consisting mainly of alterations to the inlet and outlet positions of the



*Mr. L. H. Pickles, £50 Suggestion Award winner*

heating coils of certain types of reaction vessels, his suggestion has reduced the amount of corrosion taking place. This in turn, by increasing the period of time the vessels can stay in commission before repair work is necessary, has also led to some improvement in the output of the plant.

Mr. Pickles, who is married and has one child, joined the Company in 1946. He served both in the Merchant Navy and the Royal Navy during the war, and his experiences as a second engineer officer in ships of up to 11,000 tons have proved of great value to him in his job at Blackley Works.

### *Dr. E. H. Rodd*

Dr. E. H. Rodd, who retired at the end of April, was one of those able chemists who played such an important part in the renaissance of the dyestuffs industry in this country at the beginning of the first world war.

He first joined the staff of Levinstein Ltd. as a chemist in March 1917. Here, working under J. Baddiley, he quickly became leader of a small group engaged in developing the manufacture of dyestuffs not previously made in this country. Later, as the need for imitative colours became less pressing, his work turned to the development of entirely new dyestuffs and other new products.

Dr. Rodd also took an active part in the life of his chosen profession. After a term as abstractor, in 1924 he became Assistant Editor of the Bureau of Chemical Abstracts, and for a number of years, alone or with collaborators, he contributed the section dealing with colouring matters and dyes to the *Annual Reports on the Progress of Applied Chemistry* issued by the Society of Chemical Industry. He is the author of important articles in the *Dictionary of Applied Chemistry* dealing, for instance, with indigo and the indigoid dyes and with

naphthalene. He was also active in the British Association of Chemists, serving first as Honorary Editor, and then as Honorary Registrar.

From such activities Dr. Rodd was already well known in the academic world when in 1930 he was appointed Secretary to the Dyestuffs Group Research Committee, and later of the Technological Committee and Pest Control Advisory Research Committee of the Dyestuffs Group and General Chemicals Group, work which ultimately led to the formation of the Academic Relations Department, a position which he held until he retired. From this time he was concerned almost exclusively with the maintenance of those close and cordial relations between Divisions and the universities which he described in the April number of the *Magazine*.

## GENERAL CHEMICALS DIVISION

### *Widnes at Wembley*

Four members of the Division—one from Gaskell-Marsh Works and three from Pilkington-Sullivan Works—played for Widnes at Wembley on 6th May in the Rugby League final. They are Messrs. Wilcox, Bradley, Hutton and Reynolds.

This is the fourth occasion on which the Widnes Club has played in the Wembley final—a record for any club.

### *Instruction for Anglers*

The Castner-Kellner Angling Section have started a trial series of angling instruction classes, to be held fortnightly. The first of the series dealt with various types of rods, their use and their construction. An informal talk on this subject by Mr. H. Critchley was followed by a general exchange of views and questions.

Admittance to further lectures will be by annual section membership card, price 3s. 6d., which also entitles the holder to the use of an excellent selection of fishing waters. Mr. F. Welding, hon. secretary of the section, who sponsored the talks, hopes that during the year they will cover most aspects of angling.

### *Rifle Club Successes*

The distinction of scoring the best individual average in the Midland and N.S.R.A. League has been gained by the captain of the Chance and Hunt Works Rifle Club, Mr. V. T. Taylor. Another member of the team, Mr. C. A. Rock, has the best average in the Worcestershire County League. The position is interesting in that the total scores of the two men are the same, so that each has as good a chance as the other to end up club champion for the year.

## METALS DIVISION

### *To Visit America*

Three members of Metals Division are included in the non-ferrous metals team which is to visit the U.S.A. under the auspices of the Anglo-American Council of Productivity. They are Mr. W. L. Govier (works manager at Broughton Works), Mr. J. A. Thompson (in charge of Division Cost Office at Witton) and Mr. J. W. Wilkinson (Witton Strip Mill).

The team is sailing for America on 9th June in the *Queen Elizabeth* and expects to remain there for about two months, visiting many non-ferrous metal manufacturing plants. This, however, will not see the end of their labours, for on their return to this country they still have perhaps the most important part of their job to do—preparing their report and recommendations.

Members of the team met for the first time at the beginning of May, and one of their earliest assignments was a tour of Witton Works.

### *I.C.I. versus Courtaulds*

A new link has been forged between I.C.I. and Courtaulds with the institution of an annual first aid competition between teams representing Metals Division's Witton Works and Courtaulds' Coventry branch.

As winners of the cup in 1949, Witton were hosts for the return engagement on 15th April, and there were some most realistic "accidents."



Medical officers from the two neighbouring works devised individual and team tests, and examiners and spectators alike were heartened to see the speed and skill with which both teams tackled successively burns and bleeding, electric shock and cyanide poisoning.

The uniformly high standard reached by all the competitors was clearly demonstrated when the final results were announced. Witton, with 450 marks out of a possible 600, led Courtaulds by only 12 points—a situation which promises a still more exciting contest in 1951.

### *Marston Excelsior War Memorial*

About 1200 employees of Marston Excelsior Works at Wolverhampton were present on 26th April to witness the unveiling and dedication of a plaque at Fordhouse Factory commemorating colleagues who gave their lives in the 1939–45 war. Relatives of the twenty-four servicemen whose names were inscribed on the plaque, and representatives of pensioners, Home Guard and ex-servicemen's associations were also present.

The memorial was unveiled by Mr. H. E. Jackson, chairman of the Metals Division, and the ceremony of dedication conducted by the Rev. M. Spinney, Vicar of Codsall. The band of the 22nd (Cheshire) Regiment was in attendance and provided the buglers for the Last Post and Reveille. With the playing of Grieg's triumphant "Spring" by the band and the singing of the hymn "For all the Saints" the service ended on a note of gratitude and hope, over-riding the inevitable sadness of such an occasion.

## NOBEL DIVISION

### *Lord McGowan at Foremen's Dinner*

The Ardeer foremen's annual dinner, held in the Recreation Club Hall on 14th April, was distinguished by the presence of Lord McGowan. It was, as the Chairman himself said some days later, "a great human occasion."

From the moment Lord McGowan entered the Ardeer Recreation Club Badminton Hall to move informally from group to group talking to his friends, until some hours later when, the dinner and the speeches over, he rose to say good-bye, there were warmth and friendliness. Then, as he left the hall, came a spontaneous demonstration as the audience sang "Will ye no' come back again."

Dr. A. C. Richardson (works manager, Ardeer) presided over a gathering which included foremen of Ardeer, retired foremen, representatives of foremen in other Scottish factories, the chairman and directors of Nobel Division, and members of the factory management and departmental managements.

The principal toast of the evening, "I.C.I. Ltd.," was proposed by Mr. Gavin Johnston, a superintending foreman of the Ardeer Blasting Department. "This is a great Company," said Mr. Johnston, "its growth and greatness coming from the fact that higher management has never forgotten the essential humanity that brings contentment. I believe part of this Company's success has been a success in man-management. Men do not work well in mystery! They give their best when they know a problem and understand the reasons for action."

Foremen in Ardeer appreciated the Company's recognition of their importance, and they particularly valued the Company's educational plans. "These things do not come entirely from the head. Of that we are convinced. In them is much warmth. They come from the heart. I.C.I.'s heart is powerful, sound—that is the important thing."

Mr. Johnston emphasised how the stability and foresight of I.C.I. had contributed to the prosperity of great areas in Britain. "We also know that without the courage of this Company there might have been hard times for all of us after the first world war and similarly after the second. Nevertheless I.C.I. has been looking ahead and thinking not only of the prosperity of the men and women it employs, but further to the prosperity of Britain and the Commonwealth."

Mr. Johnston then turned to Lord McGowan and said, "The fact that you chose Ardeer as the name of your barony was in itself a compliment to us and proof of your affection. It seems to the foremen of Ardeer that however long I.C.I. will last, and by whatever



*The Chairman speaking to the Ardeer Foremen*

circumstances its expanding destiny is influenced, your name will always be primarily associated with that great concern."

The audience then rose and toasted the continuing health and vitality of I.C.I. coupled with the name of the Chairman, Lord McGowan.

Rising to reply Lord McGowan said, "I would not be human if I were not touched by these references."

Returning to Britain after an extensive tour of I.C.I.'s business interests in Africa, he had seen much that was encouraging. I.C.I. staffs in Africa were in good heart, and S.A.E. & C.I. Ltd., in which I.C.I. holds a joint interest with de Beers, enjoyed a prospect of expanding business brought about by devaluation of the pound sterling which in turn had stimulated gold-mining and a need for the Company's explosives. In Africa also research and development work done by I.C.I. in Britain, notably with pesticides and 'Antrycide,' would open new possibilities for prosperity.

Lord McGowan then surveyed the world position, weighing up political factors and assessing the immediate prospect for the Company in world markets. His remarks were always illustrated with asides, shrewd comments and characteristic shafts of wit. Indeed, some of the quality of the speech came from this informal friendly delivery—the humanity which pervaded the whole.

The Company's interests prospered throughout the world, he said. I.C.I. Australia and New Zealand was vigorous and would grow with the industrial economy of these countries. Canadian Industries Ltd., in which I.C.I. has an important holding, showed great promise and would develop as the Dominion developed. Lord McGowan foresaw that in all these countries I.C.I. would enjoy a great future.

The problem of increasing our export trade throughout the world faced I.C.I. and British industry generally. In Britain's economic struggle the Company was doing its part, and this fact was well appreciated by all responsible people. I.C.I. had confidence in the future of Britain, and a measure of that confidence was to be found in the great programme of capital re-equipment and expansion, some completed and still more to be completed in the next few years, undertaken since the war. These schemes would be profitable to the Company and to the country.

I.C.I. could be justly proud of its internal relations with employees. Indeed, during the war, when some 132,000 men and women were employed, not a single day had been lost through strikes. The war was over, but still the Company could be pleased with the continuation of mutual confidence—good human relations.

Speaking on world affairs, Lord McGowan said that in all his travels he found much sympathy and admiration for Britain facing her many and diverse problems. Abroad, since devaluation, there was opportunity for our trade to be enlarged, and today the Company had industrial ambassadors at work examining such markets and determining how best to enter them. The critical problem for ourselves, for the



Western world, was that of the dollar gap. For its part I.C.I., by technical improvements and economies, was striving to hold down costs and to sell its products to the world, so giving full assistance in Britain's effort.

Ending his speech on a note of confidence and inspiration, Lord McGowan said, "Britain is passing through bad times, but this is no occasion for despair. With courage undaunted and spirit unquenchable Britain will surely overcome her economic problems and will resume her proud position of the past."

Before resuming his place at the table Lord McGowan said once more how much he was enjoying this occasion among Ardeer friends.



While Lord McGowan was in Scotland he relaxed on Saturday, 22nd April, by watching Glasgow Rangers and East Fife play the final of the Scottish Cup. Lord McGowan is Hon. Vice-president of the Scottish Football Association, and when the game was over he presented the trophy to the captain of the winning team. Here Mr. Jock Shaw of Glasgow Rangers is receiving the cup from Lord McGowan. (Kemsley Press, Glasgow)

### A Relining Record

No. 5 blast furnace in Appleby-Frodingham Steel Company's North Works, Scunthorpe, Lincolnshire, has just been relined with carbon refractories in the record time of 36 days 7 hours from the moment it went out of production. This feat was made possible by the use of explosives to strip the old brickwork and blast out the bed in the furnace hearth.

Mr. Matt Ferguson of the Division Technical Service Department, who was in charge of this work, received pleasant recognition for a job well done when he performed the relighting ceremony on 5th April. He was presented with an inscribed silver cigarette lighter in honour of the occasion.

### Bowling Pavilion Extension

A new and handsome extension to Ardeer's bowling pavilion has just been completed. It was officially opened on 29th April.

This spacious, paint-bright, seemingly new structure with its large bay window was built with materials salvaged from other work. For example, all the bricks came from a demolished chimney in Ardeer Factory and the flooring is made from reconditioned gangway planking. Some of the Company's pensioners who are keen bowlers spent many hours cleaning those bricks, and pensioner joiners made the excellent floor from old planks which were carefully dressed.

Bricklayers, plumbers, electricians, painters, plasterers and odd-job men worked vigorously because all were keen to see the Bowling Section equipped with rooms from which to view the greens during those summer hours when rain interrupts play.

The principal task of building occupied eighteen week-ends, and as a reward for an obviously successful team operation the volunteers enjoyed a dinner in the pavilion on Friday, 7th April.

### A Fatal Explosion

Just after 5 p.m. on 4th April, an explosion, with loss of life, occurred in a carttridging hut in Ardeer's Blasting Department. Four young women, it is recorded with deep regret, were killed: Miss Lily O'Donnell (Saltcoats), Mrs. Stella Reid (Stevenston), Miss Marion Harrison (Kilwinning) and Mrs. Gallacher (Stevenston). There was widespread sympathy in the factory and neighbouring towns for their bereaved families. The Nobel Division Board and Ardeer Factory management were represented at the funerals, and many members of Blasting Department were present also.

## PAINTS DIVISION

### Paints on the Air

Paints Division is now on the air every Wednesday evening, from 8.15 to 8.30 p.m. Listeners to Barbados Radio can hear the virtues of Paints Division's products extolled to the accompaniment of Carmen Cavallero and his band.

This radio programme has been arranged by Messrs. A. S. Bryden & Co., Paints Division agents in the British West Indies, in co-operation with the Division Export Department, and is broadcast by the Barbados radio distribution system. The Carmen Cavallero Show invites a guest band each week, and among these have been Charlie Spivack's band and Edmundo Ros and his band.

### Rush Order Success

An important rush order for moisture-proofing adhesive was recently successfully completed at Slough despite a breakdown in water supply.

A very important customer in Manchester recently wanted three tons of this material in a hurry. Slough Factory made an all-out effort, working day and night over the week-end until 6 a.m. on Sunday, when, owing to a breakdown in the water supply, work had to be suspended for twelve hours. However, work was resumed in time for three tons to be despatched to a very satisfied customer on Monday.

Sales of moisture-proofing adhesive have been climbing steadily, following an intensive sales drive, until the plant is now producing at maximum capacity. This moisture-proofing adhesive is used to give moisture vapour resistant properties to cardboard cartons for such household commodities as soda and salt.

\* \* \*

The Kynoch Press have kindly agreed to bind the 1949 *Magazines* for those members of the Company who would like this done. The cost will be 7s. 6d. per volume, and this will include the provision of an index for 1949, which is being prepared. Inserts will also be bound with the *Magazines* if desired, but these—together with the set of *Magazines*—must be provided by the person placing the order.

At this stage we would ask all those requiring their *Magazines* bound to advise their *Magazine* correspondent of this fact in order that we may let The Kynoch Press know the total order and number of indexes to be printed. Further instructions will be given later.

### Photographic Competition

It is proposed to devote the last two pages of the *Magazine* next February to publishing a selection from the best holiday snapshots submitted to the Editor. Further details of the competition, in which cash prizes will be awarded, will be announced later.





*An aerial view of the factory at Yalding*

# PLANT PROTECTION LTD.

A story of service to gardeners and farmers

By A. R. N. Roberts

**I**T was at Yalding, near Maidstone in Kent—where much of our output is still manufactured—that Plant Protection Ltd. began. That was on 1st October, 1937. Had anyone on that first day of the company's operations forecast that twelve years hence it would have, in addition to a London headquarters, regional offices in Maidstone, Bath, York and the Channel Islands, with a 400-acre experimental station at Fernhurst in Sussex; that its employees would have grown from 200 to 700; that its home sales would have multiplied eight times and its export sales ten times; and that the influence of P.P.'s scientific work would have been felt in the crop protection problems of nearly every land—had such a prophecy been made, few indeed would have believed in its fulfilment. Yet such are the facts today, recorded not of course in a spirit of self-satisfaction or complacency but as a measure of the opportunities our company has had, and the still greater opportunities that now stretch before it.

If we *were* in danger of patting ourselves on the back, we should remind ourselves of the man who died a millionaire whose obituary notice recorded that his large fortune was due

to his zeal, energy and resourcefulness, coupled with the fact that his father had left him £999,000. In other words, we of Plant Protection must never forget what we owe to our parents. Throughout the twelve years of our existence we have had behind us not only the financial backing and the resources in manufacture and research of our two founder shareholders, I.C.I. and Cooper, McDougall and Robertson, but also a great fund of good will in these two companies to draw upon. We owe a great deal to the friendly advice and encouragement of innumerable members of the I.C.I. organisation, from the board downwards. Of the goods we sell today a large part are finished products of the I.C.I. Divisions. Yalding has become an assembly point as well as a place of manufacture.

Let us look next at our debt to I.C.I. research. The manufacturing Divisions are constantly evolving new chemicals. Those of potential value in the control of plant pests and diseases or of weeds are sent to the agricultural research stations at Hawthorndale and Jealott's Hill. The production of benzene hexachloride by General Chemicals Division, for instance, the promise of which as an insecticide was discovered



by Hawthorndale, led to P.P.'s introduction of the 'Agroside' insecticides now in use throughout the world. Similarly, work of the Dyestuffs Division on synthetic hormones preceded the evolution by Jealott's Hill of the new types of selective weed-killers now so widely used in farming at home and abroad.

If we trace the story of these weedkillers in detail we shall find that Jealott's Hill as far back as 1936 began experimental work with the object of discovering whether plant hormones were in any way responsible for the beneficial properties of organic matter in soils. The first result was, apparently, failure. Not only did the hormones tested fail to stimulate growing plants, but they produced stunting and even death. Herein lay the germ of an idea. The success of 'Hortomone A' and other growth substances for rooting cuttings was known to vary considerably from species to species. Why should not their action upon seedlings and fully grown plants vary just as much? Might it not be possible to find substances which would stunt and kill weeds, and yet leave crop plants unharmed? The idea bore fruit.

In August 1940 it was found that applications of 25 lb. of alpha-naphthylacetic acid per acre to oats weedy with yellow charlock killed the charlock but caused nothing more than a slight setback in the cereal. Rye, barley and wheat behaved like oats, while many other broad-leaved weeds behaved like charlock. Other chemicals were tested for similar properties. In the following two years it became clear that two of the most active compounds suitable for weed control were (if our non-chemist readers will forgive us) 4-chloro-2-methylphenoxyacetic acid ('Methoxone') and 2,4-dichlorophenoxyacetic acid (2,4-D). After further trials at Jealott's Hill, 'Methoxone' was chosen for commercial development under the name 'Agroxone.' The new product, before being placed on the market, was subjected to widespread field trials organised by Central Agricultural Control of I.C.I. in collaboration with the Fernhurst technical staff. In 1945 over 100 such trials were arranged, with the co-operation of the Ministry of Agriculture officials and farmers.

'Agroxone' proved an unqualified success in the control of weeds in cereals. In particular it gave spectacular results against charlock, one of the most widespread and pernicious of the weeds with which the British farmer has to contend. Development work continues. The value of 'Agroxone' has been established in the control of rushes, ragwort and buttercup in pasture land, and also weeds in linseed, rice and sugarcane, among other crops. Its use is now an established farming practice.

Of Hawthorndale's valuable work the latest instance is the introduction of 'Mergamma.' This new P.P. product—a seed dressing—is the first combined control both of wireworm and of the seed-borne diseases of cereals. Its potentialities are obviously of far-reaching importance both at home and in the great wheat-producing countries abroad.

The development of agricultural chemicals is only part of the work of the I.C.I. and P.P. agricultural stations. There is a two-way traffic of ideas, from the farmer to the scientist as well as from the scientist to the farmer. The field representatives of P.P. at home and abroad are in close touch with growers, Government advisers and research stations at home and abroad. They report to P.P. Head Office upon the current problems which are troubling agriculturists. From the number and urgency of these demands the Technical Department of Plant Protection can assess the order of priority of the investigations which are called for. In conjunction with Central Agri-

cultural Control a programme of research is proposed for action in the manufacturing Divisions, at Jealott's Hill, Hawthorndale or Fernhurst. Supposing that by such means a new chemical comes into being, the work of the formulation section at Yalding begins.

The laboratories there have a twofold function. First to examine samples taken from all manufactured products, and secondly to formulate products in such a way that they can be conveniently and safely used, perhaps by unskilled labour, for the purpose for which they are intended. Possibly a given chemical may have a variety of uses, and a different formulation will have to be devised for each of these. The difficulties that may develop at this stage can easily be appreciated. Potential users may have, for example, better facilities for applying a product as a dust in a case where formulation as a liquid is the obvious course for the chemist. Perhaps a liquid is proposed which lacks the necessary sticking or wetting qualities required for efficient performance. Such problems have to be overcome before the product is ready for the extended trials which Fernhurst will organise in this country and perhaps in others before the new product is marketed.

Fernhurst itself is much more than a link in the chain which precedes the introduction of a new product. The whole range of the company's goods must be supported in a variety of ways. Let us give some instances of this. The technical service to Plant Protection customers, which is normally rendered by the staffs of the company's regional offices at home and by associated companies and agents abroad, is kept up to date by advisory bulletins from Fernhurst and by the issue of printed publications. These we endeavour to make a useful contribution to the literature on crop protection as well as an aid to sales. Wide use is made in Government and educational circles, as well as by our customers, of wall charts to aid identification and control of pests, diseases and weeds. The Gardening Advice Bureau deals with a host of enquiries from private garden owners who buy small packs of P.P. products through the seedsman and the ironmonger.

To aid the man on the spot, the specialists from Fernhurst—entomologists, mycologists, plant pathologists and botanists—are themselves frequently brought in as consultants for new or difficult problems in the field. This work is not confined to Great Britain. In the few years since the establishment of Fernhurst there is scarcely a country in western and southern Europe, the Near and Middle East, southern Asia, Africa and the Americas that has not received a visit from a Fernhurst expert.



*Plant Protection field which is*



Again, our Fernhurst staff plays an important part in the instruction of new entrants to our home and overseas staff and in conducting refresher courses for experienced representatives from home and overseas. In this work, as in lectures to agents and growers all over the world, we use films made by our own Film Unit on a wide range of agricultural and horticultural subjects. At Fernhurst too is located our Application Section. Its object is not to manufacture equipment but to maintain close contact with leading manufacturers so that we may advise customers helpfully on the best means of applying our products. Two important new types of spraying

machines have been marketed by British manufacturers as the result of suggestions we have made. Our Application Section also controls the organisation which we maintain at the Ministry of Agriculture's request for the preventive spraying of large acreages in the south of England against risk of attack by the colorado beetle. It was Fernhurst incidentally which trained the leaders of the teams undertaking control work in several countries of western Europe under the direction of the International Committee for the Control of Colorado Beetle. (In Jersey for several years every potato patch was sprayed by teams organised from our St. Helier office.)

Now let us turn to the purpose to which most of Fernhurst's 400 acres are devoted—the growing of demonstration crops by which the success (or otherwise!) of the methods we recommend to the commercial grower may be judged. Excluding woodland, some 300 acres at Fernhurst are suitable for cropping. This area is divided into a farm, where a policy of mixed farming is pursued; an orchard of 50 acres of apples, pears and plums and 5 acres of soft fruit; an intensive market garden; a glasshouse nursery and a Dutch light unit.

The glasshouse nursery is unique. It comprises houses of four different types of the latest designs with heating by low-pressure steam. An irrigation scheme has been installed whereby the whole market garden area and the Dutch lights can be watered by means of spray lines.

The quality of Fernhurst produce is increasingly well recognised at Covent Garden, to which consignments are regularly sent. Visiting commercial growers raise their eyebrows in surprise and approbation when they hear that as much as 90 tons of tomatoes to the acre have been raised in the glasshouses.

We have glanced at manufacture, research work and demonstration. What of P.P.'s selling organisation? The company maintains a head office and export department in London at Bolton House, Curzon Street, W.1. The Homes Sales Department is centred in four regional offices: Eastern Region (Maidstone), Northern Region (York), Western Region (Bath), and the Channel Islands (St. Helier, Jersey). Apart from the usual office staff, all four regions are represented in the field by a force of men with good academic and practical training which has been supplemented and given more precise direction by a course of scientific instruction at Fernhurst in the control of plant pests, diseases and weeds.

Men so trained are able to discuss helpfully with agricultural merchants, seedsmen, farmers, and hop and fruit growers all questions relating to this control. Their value was well described in a paper which our chairman wrote on the occasion of our tenth anniversary: "So strong is the confidence which the agricultural community has in the products of the company and the integrity of the representatives that more than half the business is done without any question of price being mentioned. This does not mean that Plant Protection Ltd. prices are the lowest in the trade. They cannot be, since they have to provide for the cost of research and of technical service. The basis of each sale is that the customer is seeking control of a pest or disease, not to acquire a particular product at the lowest price without regard to the guarantee of performance and service which is indispensable when dealing with his means of livelihood."

Speaking of the Export Department, our chairman said: "It has to maintain the highest volume of exports of British goods to foreign countries, and to do that it requires the



Workers examine a crop of oats treated with the new 'Mergamma' seed dressing effective against wireworm. Each braid is counted and recorded





*Planting out tomatoes at Fernhurst, where as much as 90 tons to the acre have been grown*

backing of factories which produce what is wanted at reasonable prices. 'What is wanted' covers not only the standard insecticides and fungicides but also the new chemicals which are the fruit of the ingenuity of I.C.I. chemists and chemical engineers. The second function is to maintain a staff of technical men who are equipped to give advice on the pests and diseases which occur in overseas territories; and this applies both to territories where it has agents who buy British products outright, and to others where our associated companies carry on local manufacture and sale but welcome advice from knowledgeable men, trained at Fernhurst and elsewhere in the science and art of pest control, to help them develop the trade."

Great efforts have been put into the development of our export trade in recent years. The devaluation of sterling last autumn gave us openings in markets that had hitherto proved difficult, and the trend of

overseas sales in recent months has been gratifying. At the same time tariffs remain a difficult barrier to surmount. The great Belgian chemical group, Solvay (whose name will be well known to readers), has entered into what we may loosely describe as a partnership with us in several of the nearer European countries. Joint operations are already proceeding vigorously in France, Belgium and Italy.

Valuable as the trade thus resulting is, success in these fields will not win us so many medals from the Chancellor of the Exchequer as will a break into the dollar areas of North America. During recent months our chairman and managing director have paid visits to America which have resulted in a link-up with the Chipman Chemicals Co. Inc. of New Jersey and its subsidiary, Chipman Chemicals Ltd. of Canada. With the good will of the I.C.I. manufacturing Divisions concerned we shall be passing on "know-how" to the Chipman Chemical Co. to manufacture in the States (where tariffs against British agricultural chemicals are almost prohibitive) so that they can make to our specifications. We are particularly hopeful of the prospects of the 'Mergamma' seed dressing, referred to above, since the control of wireworm in cereals has great possibilities with the huge acreages under cultivation in the States. In Canada the tariff position permits us to export direct, and already, as these lines are written, the Chipman Chemicals Co. is selling its first consignment of 'Mergamma.'

These arrangements with Solvay and Chipman's, plus the good work of our associated companies and agents overseas, give us high hopes of the future of our export trade, especially as our commercial efforts abroad are, as we have seen, constantly supplemented by the work of our scientists, some of whom make brief trips on special problems, others being assigned to foreign territory for periods of a year or two or even transferred to the permanent staff of our associated companies.

Last year at Fernhurst we devoted a day to the entertainment of some 500 members of the second International Congress of Crop Protection. The president of the Congress, Lord Bledisloe, was good enough to say on that occasion that he knew of no agency which had contributed so much to the science of crop protection as had I.C.I. and Plant Protection Ltd. In his address at the opening of the Congress, however, Lord Bledisloe had stressed the gap between discoveries in the

laboratories of potential value to agriculture and their application in the field. To formulate new chemicals in ways in which they will be of best service to the grower (not forgetting the amateur gardener), to supply them at reasonable prices, to advise on the best methods and times of application, and to be ever on the look-out for still newer and better methods of crop protection—these are great tasks for the British insecticide industry. In helping to discharge them Plant Protection will be proud to play its part.




*Fernhurst Research Station—North Front*



**ROYAL BIRTHS EXTRAORDINARY,**  
*The Old Lions whelped FOUR remarkably fine CUBS, three of which are in perfect health.*

TO BE SEEN

**WOMBWELL'S**  
*Royal National Menagerie.*



One of the most interesting Exhibitions which Europe affords, is a view of this Magnificent Collection of

**FOREIGN ANIMALS AND BIRDS.**

G. W. begs to announce to the Public, that the whole of his superb Menagerie will attend this place: it is indisputably the richest, grand, and complete Collection of rare and beautiful Animals that was ever known to travel through any part of the world, and is now offered for the Inspection of Amateurs, Connoisseurs, and the Public, by which an opportunity is afforded of seeing at one glance every kind of extraordinary, rare, and valuable Quadrupeds and Birds that ever crossed the Ocean, such as have been considered leading objects of Exhibition, exclusive of several Animals entirely new to this Country.—First.

*That stupendous Animal, the Performing*

**ELEPHANT,**  
*from the Theatre Royal, Covent Garden.*

TWO IMMENSE FULL GROWN BARBARY

**LIONS**  
*AND LIONESSES,*

*THE MOST EXTRAORDINARY BIRD,*

**THE PELICAN**

*Big type, little type, and plenty of both was typical a hundred years ago*

IF I AM asked whether I would encourage or advise any child of mine to go into publicity, my answer would be emphatically NO, though precisely why I find it difficult to explain in a few simple sentences. By publicity I mean that vague and undefined country which is referred to variously as publicity, public relations and, sometimes, propaganda. I do not include such well-established callings as journalism, advertising, the cinema or the arts, though each and all of these may be part and parcel of publicity.

The first reason for a negative is based on my personal experience. Though I have been engaged in publicity almost since I was demobilised from the Army in 1919, I realise I am one of the few lucky ones. It has been my good fortune to work for causes in which I had faith, and with colleagues the majority of whom I found congenial and co-operative—once they understood what I was striving to do. I am, I consider, an exception. Most of the publicity men—or P.R.O.s, as it is now more fashionable to call them—of my acquaintance have not had the same fortune. Judged solely by monetary reward, some of them may be better off than I, but on the more important issues, such as a worth-while cause to publicise, coupled with a reasonable freedom to put one's own ideas into execution, I can claim to have been engaged, for over thirty years, in work in which I have been as happy as any man can reasonably expect to be, and for which I believe my individual talents—and shortcomings—fit me better than any other. But, I repeat, I have been lucky.

In 1920, after a year as sub-editor of the house journal of the Federation of British Industries, I joined the newly formed publicity department of that organisation, my only

qualifications and experience being a passably good academic record at Cambridge, a long (if not distinguished) period of service in the B.E.F., and some native ability to write and draw. Of vocational training or experience of publicity work I had none.

Three years later I succeeded to the control of the department, for which I remained responsible until 1930. This was the formative period for the F.B.I., a period during which it was struggling to reach the pre-eminence among industrial associations which it enjoys today, and it was stimulating to have a hand in developing a good will for it with the Press and public. My task was to persuade the newspapers to recognise the F.B.I. as the source of authoritative information on all matters affecting British industry, and a hard one it was for the first few years, involving long hours spent in Fleet Street after the office had closed, and frequent rendezvous at the Falstaff and the Mitre in order to get to know the men who would have to write up the information I dished out, to get, as it were, into their skins so that I could see things through their eyes. It was rewarding work, for in the course of it I made many friendships which have been a stay and comfort ever since. It was also an experience to work under such distinguished industrialists as Sir Eric Geddes, Mr. Dudley Docker and the late Lord Gainford, and to be brought into close touch with national figures, ranging from top-ranking politicians from Lloyd George downwards, and men of letters of all sorts, headed by George Bernard Shaw. But at times I also engaged in other work, notably with the film industry (in the campaign which led up to the passing of the Cinematograph Films Act of 1928), the theatre and on other

# Publicity

## Its Frustrations and Rewards

By S. Rogerson



issues—work which showed me how unpleasant and cheap-jack publicity could be, and encouraged me to resolve not to sell my services, such as they were, solely for financial reward.

In 1930, at the invitation of my first-world-war friend, the late Lord Melchett—then Henry Mond—I joined I.C.I. to start a press department, as distinct from the existing advertising department. My position was humble and undistinguished. After the spaciousness of the non-commercial, semi-political F.B.I. work I at first felt cribbed and confined within the limits of even Big Business. There came, too, a speedy recognition of the vast difference in the attitude of the Press towards a trade association and a commercial firm. Reporters who were formerly wont to seek me out and press for news now shied away from me: in their eyes I had lost caste and was no longer a fount of information of the same weight.

Joined to this reluctance of the Press to accept I.C.I. as they had been persuaded over the years to accept the F.B.I., there was at first within the Company a lively suspicion of publicity and all that pertained to it and all who practised it, both on the part of those from whom information had to be extracted and from some of those in authority to whom alone I could look to lay down the broad lines of policy which publicity should follow. Both sets of suspicions had to be broken down, the Press convinced of the bona fides of I.C.I. and the technical mind cleared of inhibitions about publicising its more noteworthy efforts. The situation constituted a fresh challenge, and though it also represented a considerable drain on one's energy and enthusiasm, I feel we can claim that we have driven a long way towards both goals. Today I.C.I. makes the headlines as a national institution, as a profit-making concern certainly, but one which is accepted for its public service and its enterprise in research and production, which are grounds for national pride.

In 1937 the separate press and advertising departments were joined in what is now the Central Publicity Department, but the big development came with the war, when the Company recognised the use of the film, the radio, advertising and exhibitions as of value in promoting good will, and not solely to push the sale of its products. For the first time the many-sidedness of the publicity tool was understood.

Now, I have not bored you with this narrative to exalt myself or to underline the importance of publicity work, but solely because the narration illustrates many of the reasons why I should not be likely to encourage my child—or a young hopeful of any parentage—to take up publicity as a career. It raises most of the points I should make in any homily I set out to give my offspring or the progeny of others.

First, just as I gravitated into publicity with only a university

education in the humanities and an infantry officer's wartime career as my qualifications, most, if not all, of the men of my acquaintance who occupy comparable positions have transferred to these after establishing themselves in journalism, the B.B.C., politics, the Civil Service, the armed forces or almost any other walk of life. Regular Naval officers particularly seem to display a flair or a fascination for publicity. The difficulty is that there is no way known to me by which a boy or girl can set out to train for a publicity career. Certainly he or she



THE FILM is one of the more recent vehicles of publicity. This picture shows the I.C.I. Film Unit at work in the salt mines at Cheshire on their film *This is Salt*

can qualify as a journalist, a painter, a film director or an exhibition designer or a broadcaster, all of whom play in the full publicity orchestra, but there is no set course by which one can learn how to conduct that orchestra. People drift into publicity, often quite fortuitously, often from the humblest origins, and after they have reached a stable position in some other work.

But—and it is a big but—though it may be almost impossible to train for a publicity career, it is, I think, essential for success in it that one should have a thorough knowledge, if not a mastery, in one or other of the forms of expression which publicity employs to carry its message—writing, drawing, film production, radio technique and so on. Unless a publicity man is more or less a master of one or other of these himself, he will not have the requisite authority or sympathy—most important—to direct others who specialise in each or any branch. On the other hand, no amount of expertise will in itself make the successful all-round publicist. Long before he is made he must be born with a peculiar set of qualities, some but not all of which are essential, though the more he possesses the better equipped he will be. These qualities are difficult to define and will frequently not show themselves at the early age when a



young person is choosing a career—another reason for not encouraging the young.

I would say that an all-round publicity man must be sensitive to atmosphere and particularly be able to anticipate changes or developments in mass thought or opinion. He must, that is, have a highly tuned political, though not necessarily party-political, sense. He must be able readily and willingly to assimilate ideas as well as facts. He must have something of the energy and enthusiasm of the missionary. And he must

writers, artists and the like than with businessmen. It could not be otherwise.

Again, the publicity man is lucky to find himself employed in a cause in which he believes. As I have hinted, I have had experience of work which was as highly paid as it was worthless—the boosting of some inferior film, the worse it was the more “hyper-super-epic” the advertising superlatives—or, on one occasion, a first-class news story of a new invention which I strongly suspected to be the ground-bait for some bucket-shop deal. The devil can cite scripture for his purpose, and the trouble is that the more cynical excrescences on society are quicker to use publicity for their ends than the respectable people, many of whom are satisfied to cling, even in these days, to the old adage that good wine needs no bush.

Thus and thus should I try to deter any young persons from setting out to tread the publicity path, but if, being determined people, they refused to be discouraged, I should then give them my blessing and tell them how engrossing and stimulating publicity work could be. Though the majority will think of publicity in terms of the newspapers, the written word is only one of the many media in regular use. The apprentice will normally have to acquire a knowledge of advertising, which will include the technique of reproducing illustrations in monochrome or full colour, and learn the mysteries of silk screen, half-tone, photogravure, offset litho and the like. Typography is another study in itself and an absorbing one. If he



THE PRINTED WORD is still the most powerful medium of publicity. The recent I.C.I. “prestige” publication *The Colour of Chivalry* is described by one newspaper as a “magnificent volume and a great credit to I.C.I. as a producer of colours”

be a creator. The trouble is that if he is a creative type he will almost certainly be afflicted with what is known as the artistic temperament and tend to be unduly sensitive. As I have tried to show, over the greater part of my career up to date I have had to battle continually, first against the suspicion and indifference of the Press against the developing F.B.I., and secondly against a similar attitude on the part of colleagues towards my attempts to develop the work for which the Company had engaged me. It has been a wearying and strenuous experience, and had I not been blessed (or cursed) with a toughness compensatory to my sensitiveness, I should never have succeeded in I.C.I., even had I done so at the F.B.I. It is unusual to find your creative type endowed with a zest for battle or the energy to endure it, which is another reason why I should be prone to advise any sensitive, intelligent youth or maiden against entering the dust and heat of the arena into which they have to descend to battle for their ideas when they should by rights be putting them into effect in literature, films or paintings. I should try to divert their creative energies into the real creative channels—writing and the arts—or their political flair into politics proper. If they have the artistic impulse, they are likely to be far more at home with journalists,

(or she) is not a writer, then the odds are that he will be a talker, in which case he will seek to make himself proficient at public speaking, and also learn what is known as the microphone technique, so that he can be effective over the radio. Films cover a vast field, because they offer so many possibilities for study and a career. One can decide to develop a natural literary bent by specialising in script and scenario writing, or a three-dimensional sense in designing sets, or a theatrical gift by studying to become a director, or a mechanical one by taking up the actual camera work. Three-dimensional visualisation comes in again with exhibitions. The would-be publicity man can begin as a designer of exhibits so long as he remembers that when he is qualified it is he who will have to brief the designer. In other words, it is the publicity man who must not only know how and what is possible, but must evolve out of his own mind the idea, the conception of the exhibit, and be able to explain it clearly and simply so that the designer can produce what is required.

This, then, summarises the work of the publicity man. He has a vast amount to learn. It is, therefore, a nuisance that it seems to be the essence of publicity that anyone not trained in it regards himself as fully qualified to pronounce on it as an expert.



# DAN MENDOZA

By M. Mendoza

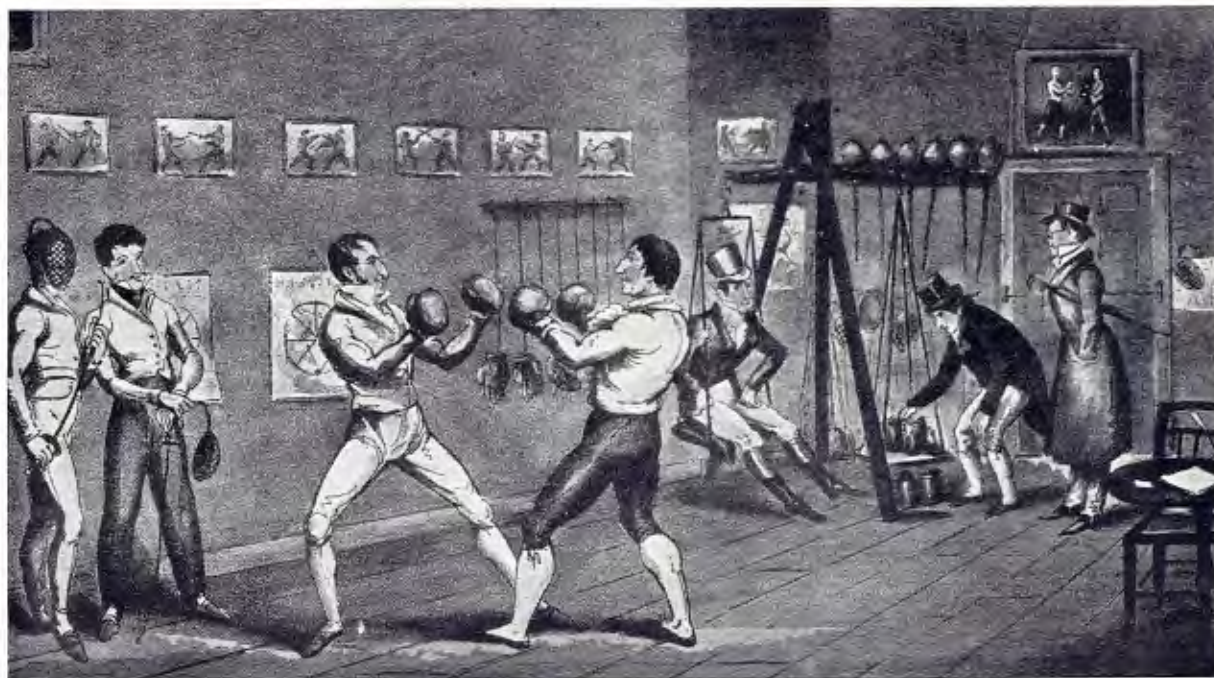
**T**HERE have always been fighters in our family. I myself, when a chemistry student at London University, was considered a quite promising welter-weight. But 160 years ago my great great- (goodness knows how many greats!) grandfather was none other than the famous Dan Mendoza. We Mendozas have always been very proud of old Dan. He was Champion of England!

One hundred and sixty years ago! They were tremendous days. Englishmen were still regarding Americans as colonists, although George Washington had recently won them their freedom. The French were about to cut off the heads of Louis XVI and Marie Antoinette. England was soon to stand at bay against Napoleon, the master of continental Europe, and Nelson and Wellington had still to win their laurels. The political scene at home was dominated by Pitt, Burke and Fox. Chemistry was emerging from the necromancy of alchemy, led by the immortal Lavoisier and the noble English recluse Cavendish. The fashionable world in London was enchanted by the music of Herr Wolfgang Amadeus Mozart. But in Whitechapel, as always, the main concern in the minds of men was the never-ending struggle for existence, and it was in Whitechapel that Dan Mendoza was born and bred into the fighting machine which became famous throughout the length and breadth of England. You had to be tough to grow up at all in Whitechapel in those days!

This sallow-skinned Jew, whose family had originally hailed

from Spain, as the name Mendoza indicates, stood five feet seven in his socks and weighed around eleven stone. A little man, with twinkling black eyes and curly black hair, of which he was inordinately proud. He wore his hair dangerously long for a fighting man, a vanity which on one famous occasion was to cost him dear.

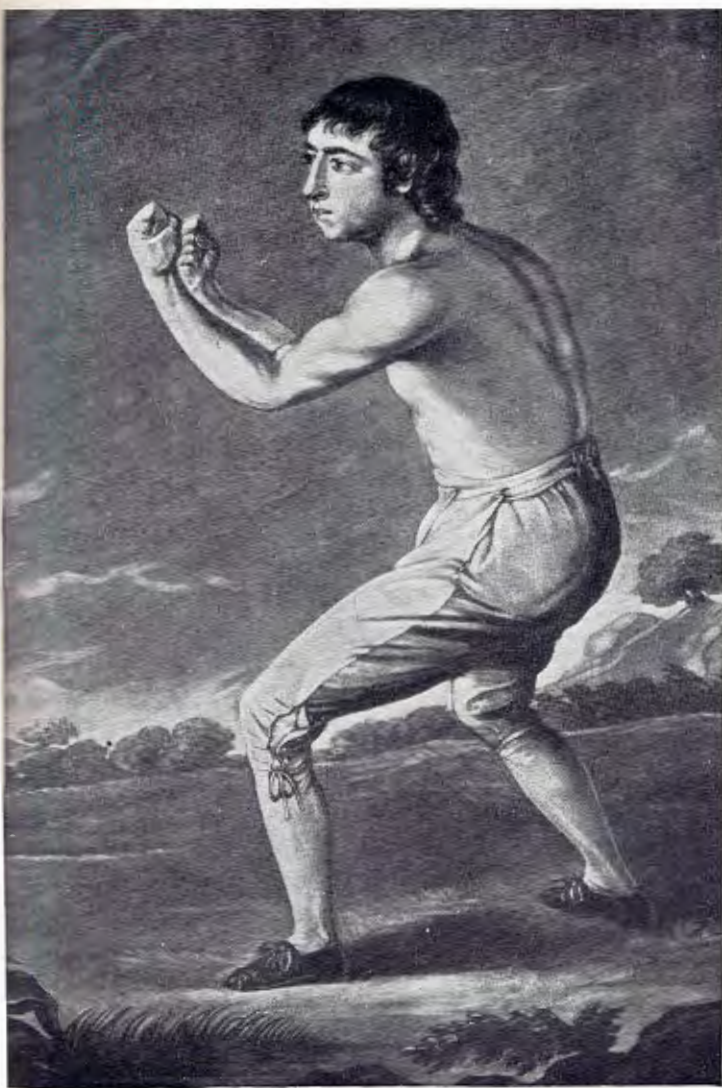
There can be little doubt that had Dan Mendoza adopted the traditional pudding-headed practice of the fighters of his day—even including such masters as Figg, Broughton, Buckhorse and Deaf Burke—the practice of standing toe to toe and just slugging it out, he would not have lasted five minutes as a pugilist. He was neither big enough nor strong enough for that. As it was, he introduced an entirely new style which was to astound and bewilder the fighting fancy and the pundits of punch throughout the land. He adopted the unheard-of practice of ducking, bobbing and weaving when coming into attack, would deliver two or three lacerating clouts and then skip gaily out of harm's way. The lion-hearted sluggers of the late eighteenth century could take that sort of thing, of course, but they couldn't take it for a couple of hours on end, and the "demmed Jew" was prepared to dish it out all night if need be. It seemed a strange un-English method of fighting somehow, but it paid handsome dividends. By the time Dan had destroyed Harry the Coalheaver (40 minutes) and had obliterated Martin the Bath Butcher in a 20-minute maul on Barnet race-course, the wealthy patrons of the art began to recognise where



GENTLEMAN JACKSON giving lessons in the art of self-defence at his Bond Street Gallery

(National Gallery of British Sports and Pastimes)





DAN MENDOZA

(From an old print)

to lay their golden guineas when the ferocious little man from Whitechapel was in the ring.

A fight in Mendoza's day was a far cry from the elaborately staged contests presented to mixed audiences by Mr. Jack Solomons. The Prize Ring Rules, the bare-knuckle code which preceded the Marquis of Queensbury Rules of today, had not yet been established, and all fights were governed by Articles of Agreement, acknowledged and accepted by each fighter prior to the bout. The sport was illegal, and many famous fights were interrupted by the magistrates. They took place in inn yards, stable yards, cricket fields or private parks, on wooden flooring or on grassy sward. Audiences of 5000 or more were not uncommon, and the fact that so many people could engage in an illegal enterprise suggests that the magistrates themselves must not infrequently have been secret fanciers of the sport. Fights were always fought to a finish, and a round ended when one of the men was grounded. Fighters could grapple and throw one another but were not allowed to gouge, scratch or kick or carry a stone in the hand! The unpardonable sin was for a fighter to go down without being struck or thrown\* and, given agreement by the umpires, could lead to instant disqualification.

Each fighter had his own umpire, generally a gentleman of substance and standing, a second and a bottle-holder. Some-

\* Slipping excepted, of course.

times a third umpire acted as arbitrator. Purses ranged from 25 to 200 guineas and betting ran high at all levels of ringside society, from noble lords to potboys and ostlers. They would bet on the outcome, the odds veering from round to round as they do today, and they would bet on first blood, first throw and first straight knock-down.

Dan fought his way out of obscurity by scientifically demolishing the lesser fry, making small fortunes for certain hard-headed gentlemen who could spot a genius in the making, but his smashing victories over Harry the Coalheaver and the Bath Butcher commanded recognition at the highest level. It became essential to match him against Tom Humphries or Bill Warr, both at the top of the tree and each with victories recorded against the other. Humphries—the Gentleman Boxer—a dashing, handsome fellow of 12-13 stone—came first. Dan fought him at the Cock Inn at Epping in 1788 and lost, retiring after one hour and twenty minutes. His stock slumped badly, all the wiseacres wagging their heads and saying that they had always known he was flashy, couldn't take punishment and indeed was sadly lacking in punishing power. Such hasty judgment was to cost them a lot of money in the next few years.

Dan found backers to match him against Humphries again, and they met in Mr. Thornton's park near Stilton, Hunts, in May the following year before a crowd of 3000. Dan's umpire was Sir Thomas Apreece and his second Captain Brown; Humphries' umpire was Alderman Coombe (late Lord Mayor of London) and his second a Mr. Johnson. After 40 minutes' fighting the bout was interrupted by "a dramatic incident."\* Mendoza's supporters claimed with considerable heat that Humphries had gone down without being struck. The umpires could not agree on the matter, a furious altercation arose between the seconds, and pandemonium broke out in the audience. Captain Brown called Johnson "a damned liar and a blackguard, which was answered by the approach of Johnson in a stern and menacing manner."\* The audience expected the additional treat of a "bye-battle" between seconds (a not uncommon occurrence), but after several minutes of uproar order was again restored and the fighters resumed. Within half an hour Humphries had done it again. This time everybody saw that he had fallen without a blow and Mendoza was awarded the purse.

It was an odd finish to a rugged battle, and, of course, it was not possible to allow the matter to rest there. The men met again in September of the following year in an inn yard at Doncaster. Five hundred gentlemen paid half a guinea each for seats, but a wiley Yorkshire ferryman transported about a thousand townsmen across the river Don at 6d. a time. These gentry swarmed into the yard making a terrific crush, but there was no means of stopping them and it was wisely agreed to carry on with the fight. This time Dan took a little more punishment than he had at Stilton but won quite comfortably.

Next came Bill Warr. It seemed that this fight was fated never to take place, several fruitless attempts being made to stage it over a period of eighteen months. First it was fixed for Stokenchurch in Oxfordshire, but when the party was on the road to the meeting place—I like to imagine the assortment of coaches, diligences, brakes and horses with two men up—they learned that the Oxfordshire magistrates were resolved to interfere. They accordingly stopped at Uxbridge with a view to holding the bout on Fenner's cricket ground but again came up against the authorities. The meeting was then fixed for Doncaster during race week, all bets to stand over, but again

\* Miles, *Pugilistica*, 1850.





**RURAL SPORTS. A MILLING MATCH** Took Place at Thibston Gap in the County of Rutland Sept 28. 1811. It was the second Public contest between these two Pugilists. It lasted 15 Minutes and 10 Seconds and was decisive. Rowlandson Del.

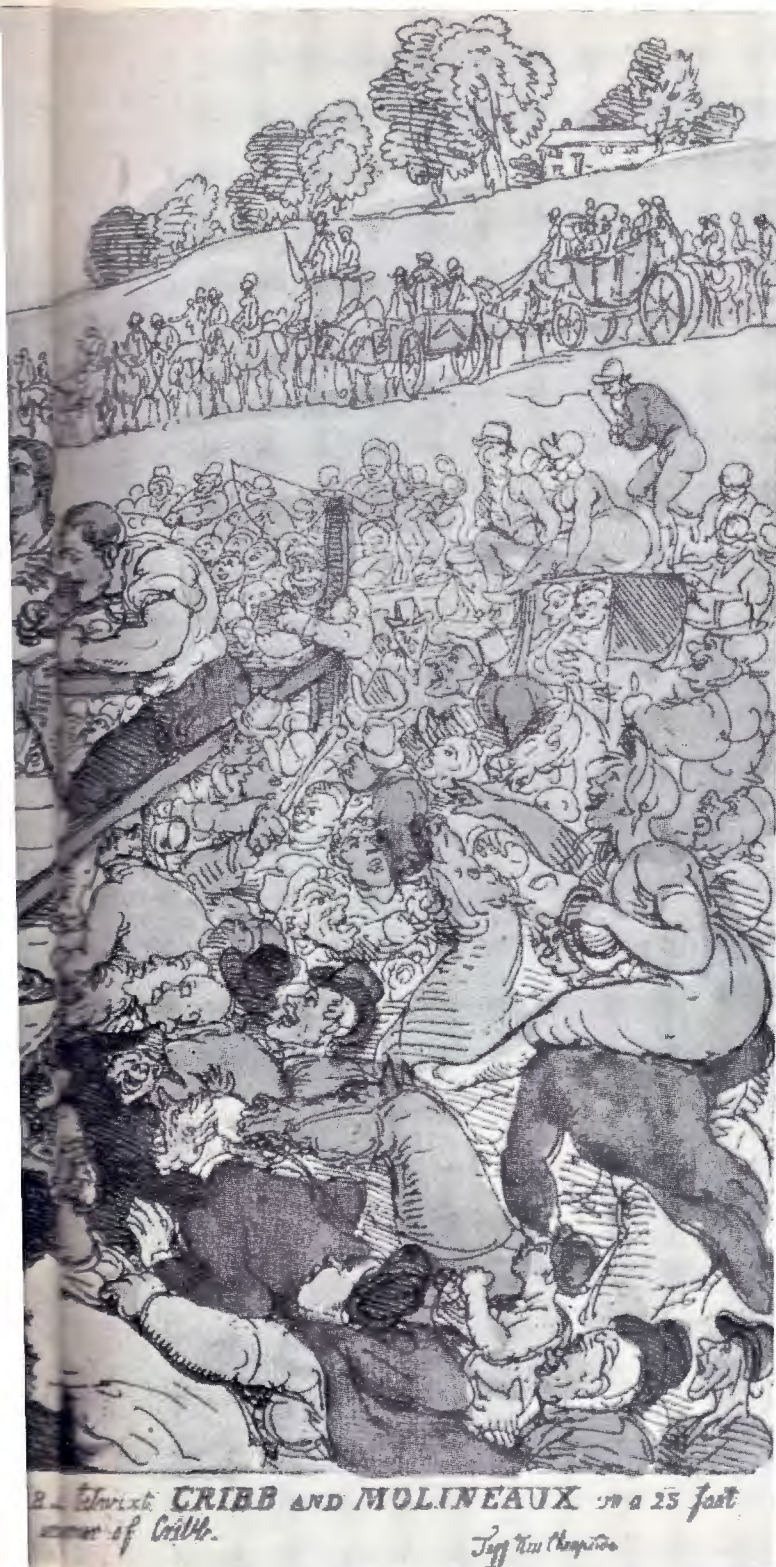
*A contemporary drawing by Rowlandson—himself a keen sportsman—of a fight between Tom Cribb and Molineaux the coloured fighter*

the eager boxing public were baulked at the last moment. Finally it took place at Smitham Bottom, Croydon, and proved to be well worth waiting for. Warr was quite the roughest customer Dan had ever met and possessed a completely devastating right hand. Mendoza took a terrific clout on the jaw in the tenth round, and the betting rocketed to 20-1 on Warr. And well it might. Dan seemed to be in pretty poor shape, but drawing reserves of strength from heaven knows where, he fought back to win under the hour, a fitting reply to those of

his critics who said he "lacked bottom." The men met again eighteen months later, but the Jew won comfortably in 15 minutes. Warr became his lifelong friend, and whenever Mendoza fought thereafter Bill Warr was to be seen in his corner.

This brings us to the period 1792-5. Dan was at the zenith of his career, the father of six children and the prosperous and highly respected landlord of "The Admiral Nelson" in White-chapel. He was the undisputed champion, and, when his





(By courtesy of The Parker Gallery, Albemarle Street, London, W.1)

duties as a father and as a publican allowed, occupied himself by taking on all comers. He went on "sparring tours," even journeying as far as Ireland, where he met a Mr. Fitzgerald, a beefy Irish squire who fancied himself, and thrashed him in under 20 minutes. He was on top of the world. All unknown to him, however, there was growing up in his own home town of London a young man who had the beating of him.

This was a most remarkable lad named John Jackson, later to become famous as Gentleman Jackson. At the age of 21

this Jackson was five feet eleven and weighed fourteen stone. He was a champion at the "standing jump" and could write his name in chalk on a wall while a "75 lb. weight was suspended from the little finger of his writing hand." What was only known to a discerning few, moreover, was that he was a most murderously accomplished fighting man. He won a few minor bouts, and then somebody—a sly fox if ever there was one—had the effrontery to match him against the great Mendoza for a purse of 200 guineas!

The pair met in a grassy hollow at Hornchurch, Essex, one misty morning in April 1795 before a crowd of over 3000. The betting was 6-4 on Mendoza. True, the younger Jackson was a fine upstanding fellow, but Dan the Master had destroyed louts of that size more often than he could count. Poor Dan! He had never met anybody of the quality of this formidable young man before. A man who could absorb punishment like a sponge and dispense it like an avenging angel. Mendoza took a terrible hiding and had all the fight knocked out of him in 10½ minutes! The main damage had been done when, in the seventh round, Jackson seized him by the hair and battered him unmercifully with a right hand like a blacksmith's hammer. Mendoza's seconds claimed a foul but were sharply overruled.

Dan must have been deeply mortified by this crushing defeat and for many months later issued further challenges to Jackson and complained bitterly that he had been fouled. There is no doubt that he would have fought Jackson again with the lightest of hearts. There was simply no end to his courage. But Jackson was too good for him, and the fighting world knew it. Jackson never fought for a purse again but retired to his boxing academy, where he taught the gentle art to the young bloods of the day. One of his most zealous pupils was Lord Byron.

Dan too began to think about retirement. He was a respectable citizen, a family man and a man of property with many responsibilities. He was not getting any younger, moreover, and young men who had learned and profited from a study of the Mendoza method—men like Tom Cribb, the Belcher brothers of Bristol, Hen Pearce the Game Chicken and others—were growing up. But Dan could never put fighting from his mind. He was untiring in his efforts to popularise the sport among respectable folk and to get legal recognition for it. One of his outpourings in the *Daily News* ended "... to gentlemen it may prove more than an exercise or amusement by initiating them in the principles of a science by which the skilful, though of inferior strength, may protect themselves from the ruffian assault of the powerful vulgar or save defenceless women from insult and imposition." And he could never resist a challenge to fight if the money was good. In 1806, at the age of 43, he fought 53 rounds with young Harry Lee for a purse of 50 guineas at Grinstead Green. Dan cut Lee to ribbons before an audience including "Lord Albermarle, Lord Sefton, Count Beaujolais, Sir Watkyn Williams Wynne, Sir John Shelley, Captain Halliday, Squire Thornhill and many other gentlemen."

Although we have long ceased to enjoy a monopoly or indeed a reasonable stake in the world's boxing championships, we have produced a handful of remarkable men who, although on the small side, have at their best been good enough to beat anything the world had to offer at any weight. I recall men like Tom Sayers, Jem Mace, Charlie Mitchell and Bob Fitzsimmons. Dan Mendoza, the pioneer of a new school in pugilism, was the first of these. He died at the age of 73, the father of eleven children.



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# Information Notes

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*Cheshunt College Cambridge*

## INDUSTRIAL STUDENTS AT CAMBRIDGE UNIVERSITY

By H. E. Norton and E. G. Jones, Alkali Division

In recent years, the attention focused on education has emphasised the necessity for widening its scope to include those who have not been fortunate enough to avail themselves of the increased facilities for higher education now provided for the youth of the country.

In the development of this field of adult education the Education Department of the National Council of Young Men's Christian Associations can rightly claim to be a pioneer. In the light of experience gained over a number of years they felt that there was a need to provide a short residential course for men who had acquired their qualification during their work in industry or commerce and who were already engaged in administration or management. And when Professor Victor Murray, who was Professor of Education at University College, Hull, and who was associated with the Y.M.C.A. movement, was appointed president of Cheshunt College, Cambridge, a theological training college, these ideas took practical shape. It was suggested that, as room was available for additional students, the college might be a good place to experiment for two years with a group of students from industry and commerce, ranging from chargehands to departmental managers.

The Council of the University was approached through the Board of Extra-mural Studies and sanction was given for such a group to attend university lecture courses in certain faculties, provided that the number of students did not exceed ten in any one term and that they all lived in college.

The co-operation of a number of industrial and commercial firms was of course essential; this was forthcoming, and from the beginning I.C.I. has been one of the strongest supporters of the scheme.

At the beginning of term each student is interviewed separately by the Assistant Director of Studies and Tutor, Mr. Dennis Raymond, and with his help a programme of lectures and reading is worked out based upon the students' interests and background, and aimed at broadening existing knowledge or opening new avenues of study. The university allows the students to attend any lectures in the Faculties of Divinity, Classics, English, Economics and Political Science, and History. Each student meets the tutor once a week when his work of the preceding week—lectures, reading essay and so on—is reviewed and his work for the following week planned. The course is fluid and a student may change his studies considerably during the course of the eight weeks' term as a result of becoming interested in a particular field of study.

Over and above academic work there are all the other activities incidental to university and college life: weekly discussions with visitors from industry or the university; play-readings, visits to undergraduates' societies' meetings on all subjects imaginable, sports of all kinds, and that most fascinating pastime of browsing round bookshops and bookstalls.

The flow is not all one way; the "industrials" have been responsible for the founding of a flourishing undergraduate society "for the



study of human relations in industry" which brings many great names from industry into the university and also facilitates discussions between "industrials" and undergraduates who are interested in making their careers in industry.

The Cheshunt College experiment, which started in the Lent term of January 1946 and was originally planned to last only two years, is now in its fifth year, and the Y.M.C.A. has been encouraged by the response from industry, the college and the university to continue the scheme indefinitely.

Nearly a hundred students (of which sixteen have been sent from all sections of I.C.I.) have now attended the course, and all have benefited in some measure from the unique opportunity afforded them by broadening their ideas, of adjusting their preconceptions and of furthering their studies in new branches of learning; their one regret is that their two months in Cambridge is all too short.

## 'PALUDRINE' SALES IN INDIA

Contributed by Imperial Chemical (Pharmaceuticals) Ltd.

The campaign to defeat malaria in the East has hitherto been prevented from making rapid headway by the illiteracy of the Indian continent. This has made it difficult to publicise the I.C.I. antimalarial drug 'Paludrine' which is now readily available and costs no more than three annas (fourpence) per attack of malaria.

To defeat this illiteracy mobile squads have been organised to show in the villages, on fair and festival days, a film explaining the cure of malaria by 'Paludrine.' The film is called *A Tiny Thing brings Death*.

Each team consists of a team leader, projectionist and driver, and is provided with a Land Rover and trailer carrying a 16 mm. projector, gramophone and ancillary equipment. The unit normally arrives in the village an hour after noon, when most of the farmers are resting after their midday meal. A suitable site for the show having been selected, the projectionist erects a small display stand carrying open tins of 'Paludrine' in 'Cellophane' strip, simple literature, models of mosquitoes and 'Paludrine' showcards.

The Rover drives round the village, the team leader announcing through his megaphone where and when the show will be given. One hour after dusk gramophone records of songs and music appropriate to the district are played for thirty minutes or so while the audience assembles. The gramophone is then stopped and the team leader gives a simple lecture on the causes and results of malaria.

Then the film is shown, after which the team leader again addresses the audience, emphasising how and when 'Paludrine' should be taken and inviting questions. Gramophone records are once more played to entertain the audience while the entire team endeavours to persuade individual villagers to purchase tablets of 'Paludrine' packed in 'Cellophane' strip, at the same time telling them the names of dealers in the nearest town who are known to carry stocks. Simple descriptive leaflets are distributed to any literates in the audience, but samples of 'Paludrine' are *never* given away free of charge.

The next morning the unit leader calls on the village headman and any shopkeepers in the village (these are rare), and endeavours to persuade them to place an order for 'Paludrine.' Finally, one or more aluminium posters graphically depicting in six pictures the use of 'Paludrine' against malaria are securely nailed in prominent positions in the village, and the unit departs.

The total population of India, Pakistan, Burma and Ceylon is about 450 million, of which some four-fifths live in some 800,000 villages. As many as sixteen distinct languages are spoken, and there is a vast number of local dialects. At the same time illiteracy in the mother tongue is high, averaging in some areas as much as 88 and 90%. There is only one doctor per 10,000 of population. Furthermore, these doctors are concentrated in the towns. The villagers cannot afford the fees.

Throughout these countries malaria is rife. Over 100 million people suffer from the disease each year and more than a million die. Malaria, which, if not fatal, leaves the victim listless, debilitated and an easy prey to other diseases, is the main cause of economic distress. The

farmer and his family are usually too poor to purchase quinine in adequate quantities, and although some efforts have been made to give supplies free of charge, the maximum annual expenditure on public health and medical services in any province of undivided India in 1944-5 was less than 9d. per head of population.

## PEST CONTROL BY EXPLOSIVES

Contributed by Nobel Division

Under the guidance of the Technical Service Department of Nobel Division a new method has successfully been tried out against that dreaded saltwater pest, the marine borer shipworm, or (to give it the correct name) *Teredo Navalis*. The method is nothing less than the destruction of these worms by underwater explosives.

Marine borers are most damaging to the life of jetty piles. Deep under water these molluscs gnaw their way steadily inwards, making cosy holes for themselves which honeycomb and thus weaken the structure. Replacement of wooden piles is a costly business, and unless effective action is taken to destroy the borer, the borer will certainly destroy the pier. Indeed, many small piers in the Hebrides and in the Firth of Clyde have gone out of use because borers have wrecked them beyond hope of easy repair. Towards the beginning of the century there was a plague of marine borers in San Francisco Bay, and damage to the jetties was estimated at a sum of \$25,000,000.

It became apparent after the war that marine borers were at work on the pier piles of the National Oil Refineries' Queen's Dock Jetties, Swansea. Nobel Division was consulted about ways and means of exterminating the pest, and one of their engineers visited Swansea. After examining the problem he set to work on an experiment. He fired small charges of gelatine explosives at known distances from the infested piles.

Great care was exercised, because it was essential that the shock wave from the explosion in the sea should be strong enough to kill the borers in their holes but not so powerful that the jetty piles would be weakened. After each shot a diver went down to look for signs of mechanical damage to the piles from the explosion, and small sections of the wood were removed for biological examination to assess the killing effect on the borers. This work went well, and after demonstrating the method of preparing shots and setting them off in position under the sea the matter was left to a trained employee, who set about the work in systematic and thorough fashion.

That was two years ago. Now it is learnt that the method of attack succeeded. The borers were exterminated and their destructive work ended. A great deal of valuable equipment has been saved.

## EVERYDAY EARTHQUAKES

Contributed by Nobel Division

Although most complaints of damage by ground vibrations due to blasting are unfounded, there are times when the charges fired are so large that special care has to be taken, particularly when blasting is taking place very close to buildings. Hitherto the range of ground vibration from an explosion has been a matter of guesswork based on experience. Now, as the result of work done by Nobel Division's Research Department and Technical Service Department, it is a matter of the most precise calculation.

A specially designed seismograph, or vibrograph, has been developed which can record the "earthquake" caused by the firing of a charge of explosive. Analysis of the record obtained shows whether the seismic shock is at all dangerous to near-by structures. For example, a quarry manager may decide to introduce large-scale heading blasts and requires to know at what limit to set his charges. A vibrograph record of a small blast will reveal the characteristics of the site, and, coupled with a study of the surrounding property, will indicate the largest charge which can be fired with safety.



The handling and interpretation of the vibrograph record have become an important function of Technical Service Department.

Opencast coal sites have required a good deal of work in this respect, since they are nearly always close to property of one kind or another and are situated in areas where people are not used to the sound of blasting. During the past year a number of special problems have been solved. For instance, in South Wales a large quarry was to be opened out immediately above a busy railway tunnel. It was important to decide what scale of blasting could be permitted without damaging the tunnel or interfering with traffic. Elsewhere a new railway tunnel was being driven close to a very old one. In this case an investigation was necessary to decide whether blasting charges in the new tunnel could cause damage or endanger traffic in the old one. Again, on a large hydro-electric scheme in Eire, blasting was going on to excavate a site for the power station, while close by a concrete dam was being constructed. Measurement of the vibration caused by the blasting helped to decide the largest charge which could be used without fear of disturbing the "green" concrete.

While it is impossible to prevent the ground from shaking when a blast is fired, where this consists of a number of shot-holes or chambers the use of short-delay detonators has been found to reduce the total amount of vibration very considerably. Interposing an interval of one-fortieth of a second between successive shots does not allow the ground to develop a serious "quake" and consequently structures near by are much less shaken. This new development has been a godsend to quarries and opencast coal sites operating in built-up areas.

## A NOVEL USE FOR DYESTUFFS

Contributed by Dyestuffs Division

'Solivap' Green, a product of Dyestuffs Division recently put on the market, provides an unusual example of the use of dyestuffs for special purposes. It is now being used to increase the yield of salt produced by solar evaporation.

In several parts of the world salt is made by solar evaporation of sea water or other natural salt waters, and in many cases other salts besides common salt are manufactured in this way. There are various ways of carrying out the process, from the most simple and primitive to the very complex. The standard process, however, usually consists of two parts. First, the sea water is evaporated in large, shallow ponds until the concentration reaches the point when salt is about to be deposited. At this stage some impurities (chiefly calcium sulphate) have been removed from the water. These so-called preliminary areas need not be elaborately constructed and are fairly cheap. In the next stage the liquors are evaporated in flat-bottomed crystallisers, where salt is gradually deposited during the summer to a depth of several inches.

The rate of evaporation of sea water depends on a rather complicated balance between the various climatic factors such as the amount of sunshine, cloud and wind, the air temperature, humidity, and so on,



*A Chinese salt farm, typical of those salt fields abroad where 'Solivap' Green may increase future yields*

but of these factors the most important is usually the amount of sunlight or radiation that is actually absorbed by the water or brine. Sunlight reaching the surface of the water from the sky is partly reflected back at the water surface, and a further fraction is reflected from the bottom of the pond. The result is that only 60-70% of the radiation reaching the water is actually absorbed by it. Sometimes natural colouring matters are present, and these increase the amount of radiation absorbed. It is possible, however, to achieve a further increase in absorption by the addition of dyestuffs.

To be of real practical use for this purpose a dyestuff must have remarkably good fastness to light, as it will be exposed to a very intense tropical sunshine for a long time. Many dyestuffs have been suggested as being suitable and have been found to be unsatisfactory. Recently, however, as a result of a series of trials carried out both on the small experimental scale and in actual practice, it has been established that 'Solivap' Green is the most satisfactory dyestuff for accelerating the solar evaporation process.

'Solivap' Green—a green dyestuff easily soluble in cold water and of very good light-fastness—is remarkable for its property of absorbing radiations at the infra-red or heat-producing end of the solar spectrum. Of all the dyestuffs investigated, 'Solivap' Green has this property to the greatest degree.

Preliminary experiments on a small scale indicated the value of 'Solivap' Green to the salt industry, but, in order to prove exclusively that a worth-while increase in salt production would result, a large-scale trial was undertaken. This trial showed that increases in the yield of salt up to 20% could be expected from existing crystallisers. Because of the resulting great thickness of the salt deposit, harvesting is easier, the proportion of salt that can be picked up from the crystalliser is greater, and the cost is correspondingly reduced. Alkali Division's Osborne factory in Australia has secured an important increase in the production of its salt fields by colouring the final solar evaporation ponds with 'Solivap' Green.

## GOLD EXTRACTION

Contributed by General Chemicals Division

Gold is very widely distributed in all the rock systems of the earth's crust, from the oldest to the newest, but it is only in certain localities that it occurs in sufficient quantity to be extracted profitably. The oceans contain thousands of tons of gold, but again the concentration of the metal is too low to permit it to be economically recovered.

The earliest known gold workings are in Egypt, and date from about 2400 B.C. Remains of these ancient workings may still be seen. In the early days the ore was broken with stone hammers and ground in stone mills to liberate the particles of gold, and the resulting powder was then washed with water over inclined stone tables. The light sand passed over the tables, while the much heavier gold particles remained.

Alluvial gold, on the other hand, was first recovered, so far as is known, about fourteen hundred years later—around 1000 B.C. Sands containing particles of gold were washed over sheepskins, and the metal, because of its much greater weight, was retained by the hairs, the lighter sand being washed away.

Today these ancient processes—which survived in one form or another until the nineteenth century—have been largely superseded by the cyanidation process for the treatment of gold ores. This process, which was introduced by the Cassel Cyanide Company (now part of I.C.I.), revolutionised the metallurgy of gold. The Cassel Company was responsible also for developing a process for the manufacture of cyanide which enabled the chemical to be produced in much larger quantities than had been possible hitherto and at a much cheaper price, thus ensuring that the cyanide treatment of gold ores would be economically attractive. These were momentous discoveries which greatly influenced the development of Canada, Australia, South Africa, the United States and, indeed, the trade of the world.

The treatment of gold ores is a complicated process, but the essentials may be summarised simply. The lumps of ore are crushed and ground to particles as fine as those in face powder and then agitated with a





*A gold extraction plant in South Africa showing the tanks in which sodium cyanide is used*

very dilute solution of cyanide in huge tanks, each holding 1000 tons of ground ore and water. Once the gold has been dissolved by the cyanide, the solution is filtered off from the now useless sand and the gold precipitated from the solution with zinc dust. The crude gold precipitate is then smelted with fluxes and the resulting bullion finally refined by a process using chlorine. The gold is cast into 500 or 1000 oz. bars and is 99.9% pure. One ton of cyanide should theoretically produce approximately 64,000 oz. of gold, but other substances in gold ores consume far more cyanide than does the gold, and one ton of cyanide in practice yields only 1300 oz. of gold.

The amount of gold in the average gold ore worked today is very small indeed. For example, to recover 1 oz. of gold from the famous South African ore it is necessary to mine and treat 5 tons of ore. Every year from the goldfield centred on Johannesburg 56 million tons of ore are hoisted from depths of from 3000 to 8500 feet below the surface and yield nearly 11,000,000 oz. of gold worth £136½ million.

The extraction of gold from its ores is not always straightforward, and it is the job of the Technical Service Department to assist those mines which encounter treatment problems. Ores from new mines are tested and suitable methods of treatment recommended. Thus, for example, as a result of work carried out on Merseyside a plant may be erected at an Australian mine and in this way a new customer secured for cyanide. This work entails visits to all parts of the world by the department's staff. Recently a mine close to the Arctic Circle was visited and the cyanide and packages were found to be in excellent condition. The drums of cyanide after leaving Billingham have to be loaded and off-loaded many times before reaching this mine, and it is

a tribute to those engaged in the manufacture and packing of cyanide that the product reaches these remote localities in good order.

The principal use of gold is as backing for nations' currencies, but in addition a comparatively small amount is used in industry and for jewellery. Because of its magnificent colour and lustre and the untarnishable nature of the metal it has through the ages been used for ornamental work. Very few can afford articles of pure gold, and much so-called gold plate is actually gold-coated silver; even some of the famous royal gold plate is, in fact, silver gilt.

Pure gold, which is 24 carat, is too soft for everyday use, and it has to be made more durable by alloying with such metals as silver, copper, zinc or nickel. The article in everyday use which is the nearest approach to pure gold is the wedding ring; it is usually 22 carat, as are the best-quality medals. Other jewellery may be 22, 18, 14 or 9 carat. Even 9-carat gold is too expensive for many pockets, but an article may be given a good gold surface comparatively cheaply. Rolled gold, of which tons are made annually in this country, consists mainly of sheets of brass or bronze to which have been sweated thin sheets of gold alloy of the carat desired, and the composite sheets then rolled to the required thickness. The thickness of the gold coating may be from one fifty-thousandth of an inch to three-thousandths of an inch. For ornamental purposes gold leaf is used. To make this, gold sheet is protected with skins and then hand beaten with wooden hammers into "leaves" of only a few millionths of an inch in thickness. The cheapest jewellery is made by depositing a film of gold on bronze or silver, either by dipping the article in a cyanide solution of gold fulminate or by electrodepositing.



## RESEARCH THROUGH FRENCH EYES

*In 1949 the Institut Textile de France sent a mission to England and Ireland to study principally the question of textile research in Great Britain. The mission was headed by Professor Jean Lichtenberger, Director of Chemistry at Mulhouse. The following is an extract translated from the conclusions of their report published early this year.*

The English achievements in the field of research are striking—much more so than their equipment—on account of the quality of men employed, their competence in their respective fields, and the remarkable results which they obtain from the means placed at their disposal. Extreme specialisation is nowhere the rule. The long view is taken, and we can only admire the way to which it is harmonised with constant care for practical results without any loss of profundity. This is an essential factor in the success of applied research—one, moreover, which conforms to the British temperament.

The organisation of research is either that of independent scientific centres or centres attached to the universities, or laboratories belonging to private undertakings sufficiently powerful to bear the cost. The intervention of the State in their finance is practically nil. It is exercised only in the form of grants to the universities, which possess complete autonomy. The independent commercial laboratories charging for their work, which are so characteristic of private research in the U.S.A., do not appear to exist—at least in the parts of England which concern us.

In regard to the independent centres, the three which we have had the privilege to visit have certain common characteristics in their conception and function. They are:

The Shirley Institute of Manchester for Cellulosic Fibres.

The Torridon Centre at Leeds for the Wool Research Association.

The Linen Industries Research Association at Lambeg, Ireland.

Their buildings are often ill-assorted and constructed without any preconceived plan and according to the needs and possibilities of the moment, but the laboratories themselves are well equipped. This equipment, without being in any way exceptional, is quite adequate for actual needs and gives the research chemists in the field of physics, physical chemistry or pure chemistry all the opportunities that they could wish for. Their scientific laboratories are always supported by pilot works equipped with small-scale machinery which permits the immediate transfer of results to a semi-industrial or industrial scale.

As distinct from the independent research organisations there are those attached to the universities. Thus in Manchester the College of Technology fills a double role. It gives to students a complete technical education in a certain number of trades—in particular textiles—and also extends its activities to separate advanced courses for people already engaged in trade, with the use of workshops perfectly equipped from the machinery point of view. On the other hand, the laboratories of the teaching staff conduct research which is of great interest both theoretically and practically. Their methods of investigation, too, have a certain originality.

The two sections of Leeds University share these same characteristics. On the one hand, there are the laboratories for applied physical and chemical study of textiles directed by Professor Speakman, who is in charge of a large body of specialist technicians. On the other hand, there is the laboratory for physical study of biomolecular structures directed by Professor Astbury, which is above all else a research organisation. Concerned first of all with problems of the structure of wool, the latter now extends its activities into more various protidic derivatives, often of a quite different structure than fibres, and this amplification of research is considered most fruitful.

The research laboratories of I.C.I. devote only a small proportion of their study to problems connected with textiles, but their research

scientists argue that the general development and perfecting of research in scientific and technical matters is a vital necessity in England. It is obviously impossible for us to pass judgment on the quality of the research personnel that we have met in the English laboratories, but we can at least report the general opinion of their directors that the results depend not only on the perfecting of the apparatus but perhaps even more on the quality of the persons engaged in using it.

## PRE-ICE-AGE REMAINS AT BUXTON

Contributed by Lime Division

Remains of prehistoric animals and weapons found by the Lime Division when quarrying in the Buxton area have supplied evidence of the jungle animals which lived in Britain before the Ice Age.

These discoveries take us back to the Stone and Bronze Ages (about 5000–2000 years B.C.) and earlier. One of the earliest records is of the discovery in 1902 of the remains of a sabre-toothed tiger and of the mastodon (a primitive elephant) by the Lime Division's predecessors, The Buxton Lime Firms, at its Victory Quarry, near Buxton. Both these creatures lived at a time before the Ice Age spread over the greater part of our island and give us an idea of the type of jungle animals which managed to exist in a climate which was presumably warmer than the one we live in today. The remains of many other animals such as the lion, leopard, grizzly bear and small-nosed rhinoceros have been found in limestone caves and fissures in Derbyshire, more especially in the famous Cresswell caves, near Chesterfield. Not many people looking at a bison in a zoo today realise that, far back in our history, large numbers of them used to roam about the countryside and were a familiar sight before the Ice Age, i.e. some 600,000–5000 years B.C.

From the remains of an ancient tumulus (burial ground) at Hindlow Works there is evidence of primitive man having lived and died near where the largest works in the country producing lime for the industrial market now stands. In these burial grounds have been found implements belonging to the New Stone Age—a period long after the bison had become extinct and estimated to be between 5000 and 2000 B.C. It appears that those buried were laid to rest with all their goods and chattels—after, of course, the payment of death duties! The finest specimen is a beautifully fashioned chisel-like axe of black flint with a highly polished cutting edge measuring six inches long and two inches wide. This type of axe was tied to a stick with animal sinew or hide, and must have been a useful and dangerous weapon. Realising that some of these finds relate to a civilisation which existed some 4000–7000 years ago, it makes present-day man feel rather small to know that his form of civilisation is only one of many which have existed on this planet.

At Tunstead a find was made relating to the Bronze Age, some 3000 years ago. This consisted of a socketed bronze spearhead. It is remarkably well made, of leaf shape, and is in excellent condition. Seven and a half inches long and two inches wide at the broadest part, it retains its cutting edge in as perfect a condition as when left by the user. This spearhead was cast over a core and is hollow to the tip; it has a loop at one side of the socket near the base of the blade for securing the spearhead to the shaft with strong pieces of hide.

More recently flint knives, an old coin, more arrowheads, and stone axes have been found at Hindlow, Tunstead and Cowlow, all of which tell much the same story but which in their turn have given some clue to the past.

All these interesting and historically valuable objects found in the Division's quarries are deposited on loan with the Buxton Museum; and to encourage employees to pass on their finds, the Division in certain cases gives rewards to those who hand in any object of geological or antiquarian interest.



# OF WOODS AND GREENS

By Arnold Bebbington



**I**T all started when I was still at school. My father, who was a lumpman in the old Salt Union Works at Meadow Bank, was helping in his spare time to lay the green for the newly formed Meadow Bank Bowling Club, and I used to go along in the evenings and at the week-ends to watch him and lend a hand if I could. When the green was ready for play it was tried out by two teams from the club. I saw the game and found it fascinating. The peaceful and leisurely progress of the contest as one player pitted his skill against another's, measuring his strength and exploiting his weaknesses, gave the game for me an irresistible appeal which it has never lost. I decided there and then that I wanted to have a go myself.

My father, who had himself been a keen bowler for many years, did not take much persuasion to give me some lessons, and before long, to my great delight, he announced that he would buy me a set of woods of my very own. There was a set belonging to the club which I had been using for my lessons and which I greatly coveted. They seemed to suit my hand—I had got the feel of them. With the club's permission he sent them away to have some copies made, and I remember to this day the tremendous moment when I unpacked and handled them for the first time. They are still among my most treasured possessions.

They certainly deserve to be, for I won the first handicap game I played with them, which created something of a sensation in those days, when you did not see many young people playing bowls. My opponent, a player of many years' standing, was chaffed by his friends for some time afterwards for being "lad-licked." The prize was a whole Cheshire cheese, presented by a local farmer, and I sent a good hunk of it to the bowls manufacturers with a letter telling them how delighted I was with their woods.

In Cheshire we play crown green bowls. Each of the counties in which this form of the game is played has its own individual championship competition, and in 1922 at the age of 18 I was one of the sixteen people who qualified to take part

in the Cheshire Merit Competition. The final in that year was played at Wallasey on a Saturday late in July. The green was just like a carpet in a luxury hotel: as your feet walked on it they sank right in. It was the best green I had ever played on. But I wasn't on it for long! My opponent, who proved the winner of the day, dismissed me in the first round for 21-5; but I was not too disheartened, for he had played on the green before and certainly did not give me much of a chance to study it for myself! If I had "dropped" with a stranger who did not know the green I might have fared rather better. When you "drop" with a homester on an unknown green I think it is generally agreed that it is ten to one against your winning.

Knowing your green is probably the first precept of every good bowler. Once you have the length of your green, as they



... The prize was a whole Cheshire cheese





*As there is so much stooping to be done you should not have a heavy meal before a bowls match*

say in bowling parlance, in my opinion you are going to win most of the matches you play on it. Even the best-laid green has slight variations in its surface—little dips and rises which may be imperceptible to the naked eye but which reveal themselves to the experienced player after four or five games on it. The slope of the green also varies considerably. The average slope of a green is between ten and twelve inches, but some rise by as much as eighteen inches. Sometimes the slope is steeper on one side of the green than on the other three—there is always bound to be some difference, and even a slight difference has a considerable effect on the speed the woods will run on it. Speeds are also affected by the texture of the grass; the finer the grass the quicker the running. To my mind, the fast-running greens with the steeper slopes are the best to play on—provided, of course, that you know them—because an opponent who doesn't is more likely to play his woods too hard and overshoot the jack.

Most greens are slow running after rain or heavy dew. Conversely, when they have been dried out by the sun or a dry wind they are fast. Thus, during the summer the average green tends to be slow in the early part of the morning, at its fastest between 2 and 5 o'clock in the afternoon, and then slow again in the evening. There is quite a considerable difference between morning and evening bowling on the same green, and it is important to bear this in mind when taking part in competitions, which often start at 11 o'clock in the morning and continue until well after teatime.

The speed of a green is all-important in a player's choice of woods—for the good amateur usually has more than one set. Woods vary in weight from 2 lb. 8 oz. to 3 lb. I have two sets myself, my original set of 2 lb. 8 oz. and another of 2 lb. 9½ oz. Like most other players, I find bowls heavier than this rather too big for my grasp, and it goes without saying that you cannot play a good game unless you can hold the woods comfortably. On slow-running greens you should bowl a heavy wood, which, once over the crown, tends to run down the other side under its own weight. The player with several sets of woods of different weights obviously has an advantage in being

able to use the set which suits the conditions of the green he is playing on.

Some players have sets which vary in bias as well as in weight. This seems to me an unnecessary luxury. The standard bias for a wood is known as "2's full." But many people like to carry a set of 2¼ or even stronger. Woods of stronger bias are usually only of advantage on your own green, where you know that by taking a wider curve with your wood you can avoid some little hollow or slow-running patch of grass or counter a heavy slope. Players on my own club green like to use 2¼ because one of the slopes is very steep and difficult to play and often proves an embarrassment to strangers.

Woods should be oiled with linseed oil or greased with vaseline after every match and periodically during the winter. This keeps them in good condition and prevents them from losing weight.

Once you have got the length of a green the essence of good bowling consists in making every possible use of all its tricks and difficulties to exploit the weaknesses of your opponent's play. If you win the toss it is up to you to bowl the jack to the part of the green which you think will be most unpopular with your opponent. If he likes a long mark, that is to say, playing the full length of the green, your best course is obviously not to start him off corner to corner. If you are playing on your own green you will obviously have favourite marks of your own, and you should try them out in turn until you find one which has the greatest difficulty for your opponent. If he learns quickly and starts to beat you on one mark, you should switch him to another.

Even on a strange green I always go for the difficult marks to try to test my opponent to the full and put him, as it were, on the defensive. After all, it does not matter how far your woods are away from the jack provided they are closer than your opponent's.

When leading on to the jack, players are often advised to "reach your block," that is to say, get as close to the jack as possible. I have always disagreed. I believe you should stop short by a foot to eighteen inches if you can, so that if your opponent comes up and hits your wood from behind he shoves you towards the jack and not away from it.

If your opponent plays short of the jack your best course, if he is bowling straight peg, that is to say, fighting against the crown, is to bowl round peg (that is, the opposite bias), which will take your wood towards the jack from the other side, thus avoiding his wood. Round peg is more difficult to play, especially on a very fast green where the effect of the slope on the speed of the wood is difficult to judge; but simply because it is more difficult and most people fight shy of it, I think it's good tactics.

Striking is always something of a gamble. If you strike your opponent's wood you stand to win, although you cannot always be sure of it. If you strike the jack off the green it is a void end, but if you miss them both you lose. Striking is only worth while when your opponent seems unbeatable.

In preparing for a big bowls match, as indeed for any other game, you should get as much practice as you possibly can. On the morning of the match itself I like to get an hour or so's practice on my own, which I think helps a great deal. Clothing should be light to avoid getting too hot and as loose as possible to allow free swing of the arms. It need hardly be said that, as there is so much stooping to be done, you should not have a heavy meal before a bowls match.

Before the match starts take a walk round the green, which





... and put on a great show of amusing antics and gestures

will usually be a strange one to you, and try to weigh it up and get an idea of how it runs. Examine the slope of the crown and look out for any variations in the surface and the texture of the grass. If you are not playing in the first game or so yourself, watch the games before yours carefully and you should get some appreciation of the speed of the green and its own particular tricks and snags. Even if you are drawn to play in the first game you can get some valuable information from watching the progress of the jack, whether or not you bowl it yourself. After this the most important thing is to study your opponent. Try to discover his weaknesses and play on them for all you are worth.

Some bowlers like to play up to the crowd and put on a great show of amusing antics and gestures, which are always vociferously appreciated. I once played against a man who made a habit of springing several feet into the air after delivering each wood. This was a wild success with the spectators but I felt it rather wore him out; anyway, he lost the game. Although it is encouraging to have the crowd supporting you, I think you get far better results by giving all your attention and energy to the play. It is important to keep as fresh and cool as you can during a big match.

My advice to beginners is to play with a good player, study him to get a proper stance at delivery and cultivate a nice even swing of the arm, which helps you to get your length better. To develop your swing you should get as much practice as possible on greens of different speeds—a fiery or very fast green will need quite a short swing; a slow green, a long full

one. You must have complete control of your wood. Don't hold it too tightly; just let it rest comfortably in the palm of your hand against the thumb. After delivery you should never take your eyes off the wood until it stops moving; follow it along its complete course. Some players, with a great air of confidence, turn their backs on the green as soon as they have delivered, but to my mind this is careless play. Even on your own green there is always something to be learnt from the progress of a bowl—some slight hollow may have developed or a little rise disappeared after the last rolling. One other "don't"—don't confine your play to any one length. Try to learn to play any length. This is particularly important for competition games when you come up against strangers who favour different lengths from yours.

After 1922 I took part in several Cheshire county competitions without ever winning the championship, although I received several prizes. In the 1940 semi-final I managed to beat my opponent 21-4, which made me the favourite, but in the final against Jim Davies, the all-England champion and four times Cheshire champion, I was not so fortunate and lost, by a curious coincidence, by 4-21. Davies, whose shortness (he is only 5 ft. 6 in.) sometimes causes his opponents to under-estimate him, is a player of enormous versatility and confidence. The crowd never upsets him. He is also an excellent strike—which in fact has won him many of his games. In 1948 I again played against him in the final and gave him a much better match. It was a very close one, too. I was leading 19-17 on a very fast green—the woods seemed to trickle for ever. I was lying game and Davies came up with his last wood and glanced one of mine away from the jack. I did not score again in the last two ends.

In the following year I watched him in the qualifying round at Meadow Bank, the scene of my childhood success. This time he was beaten—my bogey-man, in fact every Cheshire bowler's bogey-man, was out of the final day's play. He congratulated me, since I had already qualified, and told me to go in and win, and I did. This success qualified me to compete for the All-England Championship, the blue ribbon of crown green amateur bowling, which I also had the good luck to win. The double success, in the same year, of winning both the Cheshire Championship and the All-England Championship has only been attained once before, and significantly enough by an I.C.I. man, Billy Gerrard, who used to be at Winnington.

Of the six games I played that day perhaps the most exciting was the third against H. G. Thornton, the Yorkshire County champion. I was leading throughout the game until the score stood at 19-11. Thornton then played a very good wood to win at one corner of the green and then, after a series of brilliant throws, took the lead at 20-19, but in the last end I scored two to win 21-20. Despite the practice I had put in to prepare myself for the match, I felt the strain for more than a week afterwards.





